The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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The Great Blast at the Port Henry Mines.

To-day (April 19th) will witness one of the greatest and most interesting blasting operations ever attempted in connection with the mining of iron ores in this or any other country. Some years ago the Port Henry Ore Co., in the work at its "21 Mine," Mineville, Essex county, N. Y., began to be seriously inconvenienced by the size of the pillars which it was necessary to leave for the support of the roof. These were of enormous proportions, being from 140 to 170 feet in hight, and some 40 or 50 feet in diameter at the base, while the roof rock and earth above were some 80 feet in thickness. It at last became a question simply of abandoning the mine or taking off the roof and removing the pillars. As the cost of doing this would be very great and require much time, it was decided to make a very thorough exploration of the mine before undertaking this work, in order to ascertain whether such a work would pay. For this purpose the diamond drill was set at work and borings made to find approximately the mass of ore below the bases of the pillars. This was found to be so large that there was but one alternative—to unroof the mine and take out the pillars. The work of unroofing has been going on for some four years. From Mr. J. B. Brinsmade, secretary and treasurer of the company, we have the following clear and very interesting account of the pillars, their mass and the reasons for their removal and the advantages to be obtained:

Beside the ore in the pillars and at their bases, which will be available by unroofing the mine, masses of ore in the north walls of the mine are also available by the proposed unroofing. There are in these walls, and forming part of them, two partially cut pillars that now have the character of immense buttresses—one at the main entrance at foot of No. 1 slope, 180 feet high; the other just east of the third slope, and, say, 160 feet high. The extent of ore back of these buttresses is only partially explored, but it would, without doubt, be entirely safe to place the amount of ore thus made available by the unroofing, at 200,000 tons, in addition to the amount in the five pillars, already estimated.

Again, the ore in the bases of these five pillars, below the present floor, may safely be estimated at one and one-half times the amount in the pillars as they now stand, or 150,000 tons additional.

The work of unroofing the "21" mine belonging to the Port Henry Iron Ore Company comprises the removal of a roof of rock and earth 80 feet thick, over an area of 39,200 square feet; and the blowing up, or rather down, of five immense pillars of pure iron ore that have been left standing in the mine to support the enormous weight of the overhanging roof.

The volume of earth overlying the rock is 350 feet in length, and varies in width from 50 to 200 feet, averaging 112 feet. The average depth of the earth is 30 feet. This entire volume of earth comprises 44,000 cubic yards, and has all been removed excepting a small amount on the slopes.

The entire volume of rock underlying the earth, and which is in active process of removal, contains 51,500 cubic yards. This rock excavation is 300 feet long, and varies in width from 40 to 200 feet, averaging 90 feet. Its depth is from 25 feet to 100 feet, averaging 50 feet. It has all been removed to within 18,500 cubic yards.

The pillars supporting this roof are five in number, and range from 50 feet to 170 feet in hight, and are estimated to contain 95,400 gross tons of iron ore. A portion of the roof supported by two of these pillars has already been blown up and removed, together with one of the pillars. This was successfully accomplished in the fall of 1876 by two successive blasts with vigorite and electricity. A series of holes were fired simultaneously at each blast. Four pillars are left standing, and three of these, together with a large area of the roof, are in readiness to be blown up. The amount of ore in these three pillars and in the arches and roof supported by them is estimated at 79,800 tons.

The "21" mine is an opening upon a vein or stratum of magnetic iron ore from 200 to 300 feet in thickness, dipping southerly at an angle of 50°, and extending to an unknown depth. The ore has been mined to a distance of 400 feet upon the dip of its vein, and consequently the mine or working extends for a considerable distance under the overlying strata of rock. This overlying rock forms what is technically called the "roof" of the mine, and is supported by enormous pillars or columns of iron ore from 50 to 170 feet in hight, and then rest upon a floor of solid iron ore at their base. These columns would eventually be more than 300 feet in hight as the working of the vein descended to the "bed rock," and their bases would occupy a large part of the floor of the mine. Hence the necessity, in a practical and economical point of view, for the removal of a portion of them. These pillars are generally from 30 to 40 feet in lateral dimension.

In our next issue we shall give an account of the explosion, and means used to effect it, as well as other particulars which will be of interest.

Forty-Two Inch Car Wheels.

The following interesting paper, on the advantages of large car wheels, written by Mr. Wm. W. Snow, was read at the February meeting of the Master Car Builders' Association:

There are many features of economy that present themselves to notice in the use of a larger diameter of wheel, among which are the following: Less wear and tear to the rolling stock, rail and roadbed; less friction on the journal and wear of brasses; less motive power required to haul the train; more safety in their use, making less revolutions.

Perhaps the greatest saving is the great reduction in cost of using larger wheels. Taking as comparison the difference in mileage of a 26 inch wheel with that of 33 inch, and computing the same with a 42 inch wheel, allowing the advantage gained by the increased diameter, we find a 42 inch wheel under the same equipment will make fully two and one-half times more mileage than a 33 inch wheel. With this fact established we have but to find the difference in cost between the price of the old wheel worn out and the new wheel, and we find a very great saving in the use of 42 inch wheels, probably reaching from 30 to 40 per cent. in the service of the wheel alone.

It has been fully demonstrated, from carefully compiled records from several of our first-class roads, that in the life of a 33 inch chilled wheel under their passenger equipment, they will make a general average of 55,000 to 60,000 miles.

The mileage of 42 inch wheels being two and one-half times that of 33 inch, or 137,000 miles, and the first cost being $24, and value of old wheel worn out $8, makes a total cost of $16 per wheel for 137,000 miles run, which gives us the extremely low figure of 11·7 cents per 1000 miles.

It appears from these facts that no steel, wrought iron, or combination wheel of steel and iron can be made that will be so economical in service as the solid cast iron chilled wheel.

With these suggestions the subject is worthy of careful consideration. Much might be said in regard to saving of brasses, as it is a fact that no bearing has been known to heat with a 42 inch wheel on the axle since their introduction into this country. The famous fast trip across the continent to California was a remarkable test of their superiority. The heavy hotel car had 42 inch wheels under it, and the boxes were not oiled during the trip, and it did not heat, while the car using 33 inch wheels had an arrangement for oiling the boxes from the inside of the car, and they were frequently oiled to prevent heating.

The easy motion from using large wheels should commend them as a means of prolonging the life of the rolling stock, while the extra leverage must be able to decrease the motive power required.

Much has been said and written about finding the best method of reducing dead weight on our trunk lines, where freight is carried at such extremely low prices. Have we not a solution of this problem by making our cars a little stronger, increasing the diameter of the wheel, and carrying 15 or 20 tons? As to the strength of a 42 inch chilled iron wheel, we have but to refer to the past few years, when very many 48 inch and 54 inch solid chilled driving wheels were used under locomotives where the service was much more severe.

Our opinion is, from practical experience, that a 42 inch wheel is stronger and safer than one of smaller diameter. It will work better in a four-wheeled truck than in a six-wheeled truck, and probably any other size would do the same.

We advocated the large wheel to save using the six-wheel truck, but find many railroad officers prejudiced (and perhaps justly) in favor of a six-wheel truck. They claim it is less liable to leave the track from broken rail or broken axle. There is no question about the extra friction in curving a six-wheel truck, and with the extra leverage in the 42 inch wheel over the 33 inch, preference should be given to the 42 inch wheel in curving, whether it be a six or four-wheel truck.

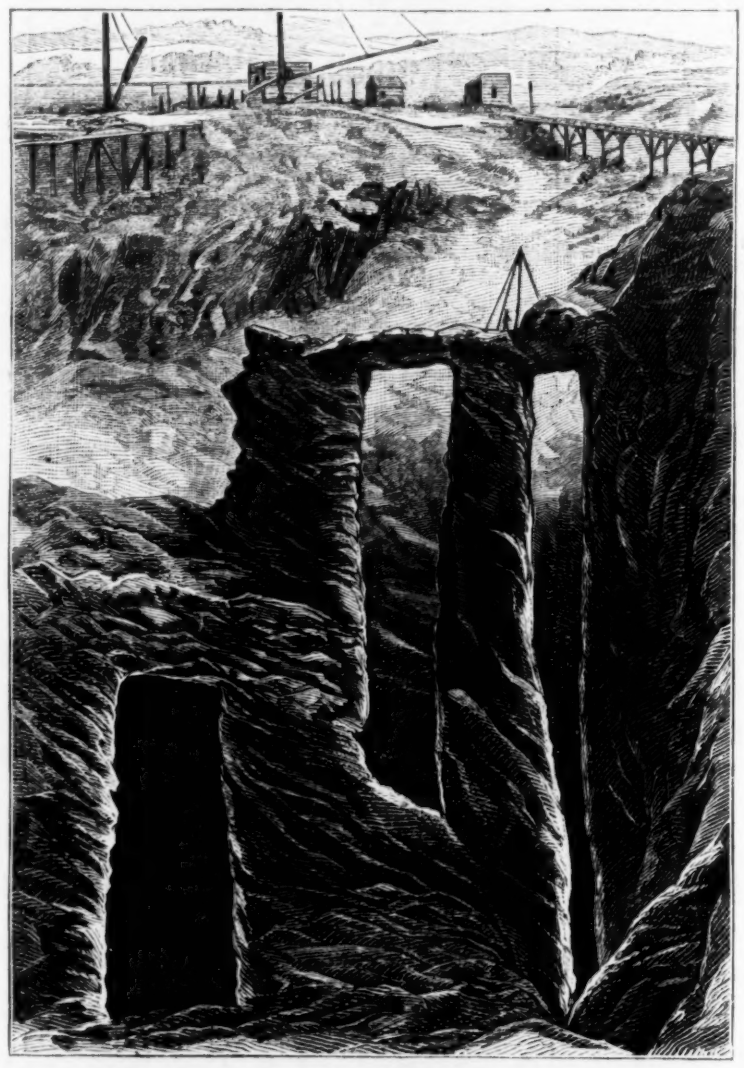
A careful consideration of this subject has resulted in our firm conviction that a saving of over 30 per cent. may be made in our wheelage account alone by the use of 42 inch wheels.

Scientific and Technical Notes.

Mr. James Forest, in his "Abstracts" printed in the proceedings of the Institution of Civil Engineers, gives an account of

A NEW ELECTRICAL LAMP,

described in a note to the Academy by M. Denayrouze. The invention dispenses with all the mechanism usually employed in ordinary any ordinary regulator. With a single electro-magnetic machine of the ordinary kind, three sources of light can be maintained.



PILLARS OF IRON IN "MINE 21," PORT HENRY, N. Y.

Natural ivory has been investigated as to its composition, and the proportions of the materials found *in natura* have been adopted for the manufacture of

ARTIFICIAL IVORY,

which is made as follows: Two parts of India-rubber are dissolved in 36 of chloroform, and the solution staturated with pure ammoniacal gas. The chloroform is then distilled at 180° Fah. The residue is mixed with phosphate of lime, or pulverized carbonate of zinc, pressed in molds and dried. When phosphate of lime is used, the artificial product resembles natural ivory very closely. The matters for which no substitute is provided are of small importance. In Paris, M. Dupre makes artificial ivory with papier mache and gelatine. Billiard balls made of this substance cost only a third the price of ivory, while they possess all its hardness and elasticity. Used for other purposes, this pasty compound takes the name of Paris marble, and is worked up for moldings, capitals of columns and architectural ornamentation generally.

In German and Austrian laboratories there has come into use an invaluable filter made of a

FINE SPUN GLASS,

presumably different from that which may now and then be seen used in ornamental toys. It has the appearance and most of the mechanical peculiarities of cotton or silk thread, and is stated to be very valuable as a filter where the solution would be affected by the ordinary filters, or as a collector for precipitates. If we wish to calcine an insoluble compound on the filter used for its separation, we find in the crucibles, with the residue, without ash, a crystal globule, which represents the original filter. An allied use is found for it in the preparation of brushes used in solutions which attack those made of organic material, and safe, therefore, when used in such matters as chromic acid, nitrate of silver, iodine, &c. The German term for it is *glaswolle;* the French, *coton de verre.*

Mr. Throckmorton, one of the Fish Commissioners, presented to the California Academy of Sciences, the other evening, a specimen of fish caught in the salt marshes in Marin county, and gave an amusing account of

DIGGING FOR FISH,

in the river banks. The fish looks like an ordinary "bull head" or sucker, and is probably familiar in appearance to many. Its peculiarity consists in its mode of life. Some of Mr. Throckmorton's land beyond Lime point is ordinary salt marsh land, and he several times observed Chinamen at work at low tide, with shovels, apparently digging into the banks of the little creeks. He went down to see what they were about, and was surprised to have a Chinaman answer his question by saying he was "fishing." Fishing with a shovel was a new experience to Mr. Throckmorton, although he has been for many years an enthusiastic sportsman. On examination he found that the bank showed numerous round holes at about the half-tide mark, and the Chinaman took the shovel, sliced off some of the bank and hauled several fish from one of the holes The holes are similar to those made by swallows, and are in such a position that the entrance is under water about half the time. The tide rises here about six feet, and the mouths of the holes are about three feet below high watermark. They go straight into the bank a short distance and then turn down, so that when the tide falls below them they are still filled with water, although the entrance may be two or three feet above the water at low tide. They seem to have more of the habits of an eel than an ordinary fish, and the skin is also eel-like. Mr. Throckmorton says the flavor of the meat is also similar to an eel. The Chinese laborers gather great quantities of them at low tide. A fish living in a hole in the ground like a squirrel is something new here, we believe, nor do we recollect of their having been found elsewhere.

The Stevens Battery.

Negotiations are in progress for the sale of the famous Stevens battery to one of the European powers. During the last of March the vessel was pretty thoroughly inspected by a party of gentlemen, among whom were several representatives of the foreign power. They found that the keel of the vessel has not strained, and the chocks on which it rests are sound and not indented, although they support a dead weight of over 3000 tons; the lines of the ship are perfect, and not a rivet head has started; and in the engine room every surface liable to tarnish or rust has been varnished, black-leaded or covered with white lead or tallow. Even the interior of the boilers is covered with fish oil, which prevents decay, and a thick coat of red paint protects the hulls (she is double-hulled) inside and out. In a word, the craft is in just as good a condition as when Gen. G. B. McClellan left her in 1873, having expended in building an inner hull and continuing the construction, $1,000,000. Her speed is estimated at 15·75 knots, or a fraction less than 18 miles per hour.

The vessel now only requires to put her on the water—rudder and steering gear, joiners' work, hurricane deck and gunwale, boats and apparatus, ventilating pipes, turret, water tanks, fitting up of magazines, store room and officers' quarters, &c. On machinery there will be needed propellers, reversing gear, lubricating apparatus, feed and bilge pump connections, anchor hoisting machinery, auxiliary pumps, &c.; in boiler room, gauge cocks, floor and ladders, coal chutes, &c.; ship's outfit generally; smokestacks. In addition to which she would have to be provided with armor and armament.

As the battery now lies she is separated by a bulkhead of earth and piles from a North River dock, which would have to be dredged to allow her to reach the river, as she draws 22 feet of water as calculated. Those who are conducting the negotiations say that the real time necessary to complete the vessel will be 90 days, and it is claimed that the material for armor-plating her will be ready at 48 hours' notice, and that in 24 hours from 500 to 1000 able mechanics can be engaged. Should a sale be effected, the purchasers will doubtless engage the services of General McClellan and Professor R. H. Thurston, consulting engineer to the New Jersey Commission, and the engines will be completed and overhauled by the firm that constructed such of the propelling apparatus as is already in the hull.

The history of the battery, began many years ago by John Stevens, is too well known to need repetition. The craft is 401 feet "over all" in length, 45 feet broad amidships, or over armor 54 feet, with a depth to main desk of 24½ feet. The displacement is (at 22 feet draught) 6006·2 tons. The main deck is flush from stem to stern, and the proposed turret would be 30 feet in diameter, with 16 to 18 inch plating, with an armament of two 20 inch, 95,000 pound guns or two rifled 12 inch guns. The vessel would carry a crew of 250 men.

Iron Ties for Railroads.—Iron ties are being tried on a section of the Central Pacific Railway, and are said to prove very satisfactory. They consist of circular concave plates, sixteen inches in diameter, with a saddle upon the top in which the rail is set, much as in the ordinary chair. The outer half of the saddle is cast with a plate or bed-piece, and the inner half is secured with bolts after the rail is in place. An iron cross bar connects the plates on opposite sides, the bar having a joint in the center held by a bolt, with an elastic material in the joint, Elastic material is also placed between the rails and the bed-plates. It is claimed that the plates give a better support than wooden ties, and are much more enduring, and that so, although costing twice as much as ties, they are more economical. The interest account will probably after all settle the question between iron and wood as a material for ties. The mechanical difficulties in the way of a good tie made from iron are small, since by the use of a cushioning material, the advantages of wood may be gained where iron is used.

When George Stephenson's railway project was met with the question of what would happen if a cow should oppose the passage of one of his trains, his only reply was, "It would be bad for the coo." Experience has verified this sage remark on more than one occasion, but it was reserved for a Virginia bull to redeem the credit of his family in this respect. Last Saturday night this valorous animal enforced his objection to the passage of a freight train by throwing it from the track and through a bridge, causing the boiler of the engine to burst and the bridge and train to catch fire and be destroyed. Upon the final fate of the bull our special correspondent is strangely reticent, but his end is dimly foreshadowed by the information that the engine and train tried to creep across him.

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SEE PAGE 9.

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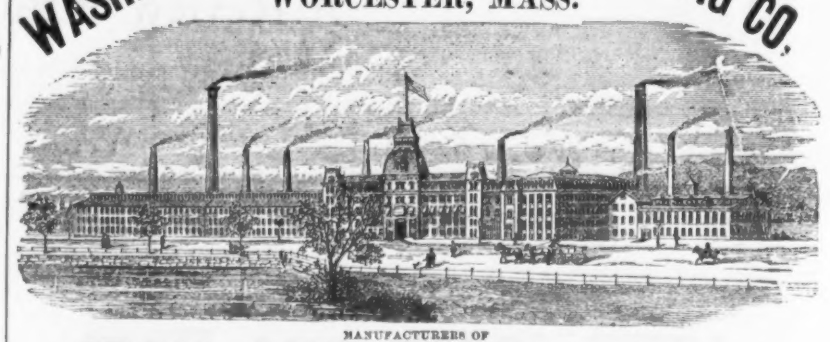

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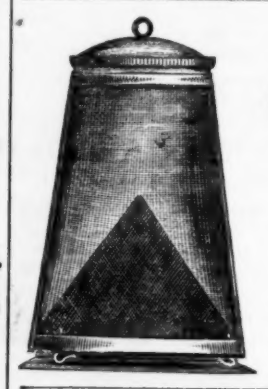

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Failures in 1877.

Messrs. Dun, Barlow & Co. send us the following, under date of April 13th:

The following table shows the number of failures which have occurred throughout the United States and Canada for the first quarter of the current year, compared with the same quarters in previous years, together with the amount of liabilities:

States and Territories.	First Quarter in 1877.		First Quarter in 1876.		First Quarter in 1875.	
	No. of Failures.	Amount of Liabilities.	No. of Failures.	Amount of Liabilities.	No. of Failures.	Amount of Liabilities.
Alabama	28	$489,731	24	$253,900	15	$366,000
Arizona	...	...	...	...	...	...
Arkansas	10	98,900	5	97,700	3	17,000
California	81	558,559	52	1,201,398	61	675,971
City of San Fr'ncisco	39	976,217	...	...	...	...
Colorado	13	179,900	6	50,000	...	...
Conn.	96	1,851,423	62	1,722,394	41	297,161
Dakota	2	16,000	3	67,000	...	...
Delaware	6	106,500	6	85,000	5	65,000
Dist. of Columbia	13	115,700	1	4,477	5	28,831
Florida	5	23,000	5	30,000	4	160,000
Georgia	54	484,456	68	2,180 276	40	1,057,300
Idaho	1	24,500	1	3,500	...	...
Illinois	152	2,062,000	132	2,962,500	96	2,385,018
City of Chicago	72	3,302,800	52	3,097,200	...	...
Indiana	113	1,131,615	92	1,322,721	84	1,661,349
Iowa	172	1,053,300	96	1,189,180	44	376,265
Kansas	13	74,400	19	171,500	19	83,300
Kentucky	69	2,313,650	68	1,218,953	98	1,196,000
Louisiana	10	136,000	14	533,525	6	305,831
Maine	26	291,200	40	669,450	...	...
Maryland	96	604,900	44	768,492	41	780,435
Mass.	178	2,363,683	154	4,022,560	113	5,514,000
City of Boston	31	1,059,800	114	6,157,000	...	...
Michigan	110	2,407,964	159	3,444 829	61	511,041
Minnesota	57	422,500	44	263,477	19	250,000
Mississippi	39	516,389	31	311,043	17	413,450
Missouri	75	875,642	85	653,300	65	1,199,550
City of St. Louis	40	821,000	22	581,933	...	...
Montana	...	...	2	55,000	...	...
Nebraska	12	83,900	8	51,300	16	12 ,000
Nevada	19	352,743	8	92,000	...	...
New Hamp.	27	151,662	18	247,500	...	...
New Jersey	40	641,000	53	657,747	11	81,758
New York	358	5,7 4,712	282	6,085,968	122	2,694 562
City of New York	283	11,917,700	313	9,513,548	197	8,490,500
N. Carolina	23	173,165	55	492,785	16	123,000
Ohio	129	1,993,995	137	2,113,095	73	1,187,155
City of Cincinnati	34	1,041,648	28	731,879	...	...
Oregon	10	71,000	6	25,300	...	...
Penna.	166	2,6 5,766	139	3,125,174	155	4,927,606
City of Phil.	46	1,481,900	34	1,32,28	...	...
R. Island	26	848,477	36	982,191	21	476,594
S. Carolina	42	792,260	40	725,858	61	989,236
Tennessee	34	411 100	...	...	23	148,765
Territories	...	...	...	...	32	546 702
Texas	52	804,923	41	635,896	67	660,100
Utah	4	26,000	1	6,000	...	...
Vermont	34	23 ,468	28	437,700	7	31,700
Va & W. Va.	48	432,847	54	2,121,665	47	642,765
W sh. Ter.	1	14,000	3	165,644	...	...
Wisconsin	46	775,274	92	1,089,712	57	419,384
Wyoming	...	...	1	37,000	...	...
Total	2,869	54,538,074	2,8 6	64,644,156	1,733	38,873,222
Dom. of Can.	572	7,576,511	477	7,418,930	396	4,14 ,340

The failures for the first quarter of the present year differ very slightly from those for corresponding quarter of last year. While the number is increased by 63, the liabilities are $10,106,082 less in amount. The average liabilities for the first three months of the present year are only slightly over $19,000, against $23,000 in the first quarter of 1876. In order to afford a more complete comparison, the following table is inserted, which shows the failures in each quarter of the past two years, and the average liabilities for each quarter and for each year:

Years.	No. of Failures.	Amount of Liabilities.	Average Liabilities.
First Quarter.			
1875	1,882	$43,176,938	$21,784
1876	2,806	64,544,156	23,038
1877	2,869	54,538,074	19,010
Second Quarter.			
1875	1,581	33,667,313	21,295
1876	1,794	43,771,273	24,398
Third Quarter.			
1875	1,771	54,328,237	30,676
1876	2,450	47,857,371	19,534
Fourth Quarter.			
1875	2,405	70,888,850	29,475
1876	2,042	34,844,893	17,064
Total for the Year.			
1875	7,740	201,060,333	25,990
1876	9,092	191,117,786	21,020

In New York city the number of failures show a considerable diminution, but, contrary to the general tendency of the figures in all other localities, the liabilities show a marked increase. This is explained by the fact that, included in the failures in New York in the last quarter, are quite a number of concerns who were practically out of business, but who, in order to be relieved from old liabilities, have availed themselves of bankruptcy. Two railroad operators alone, who really stopped payment long ago, formally suspended within the past two months, and the liabilities of these, amounting to nearly four millions, go to swell the total for New York city beyond what the real mercantile indebtedness would amount to. Deducting this and other sums of similar character, the failures and liabilities in New York city for the quarter are much less than last year.

A sense of disappointment pervades the public mind at the results of the past three months' trade. The indications of last autumn were sufficiently promising to create a reasonable expectation that, as soon as the succeeding political complications were dispelled, a more prosperous period would set in. But this expectation has been only partially fulfilled. Notwithstanding small stocks in the hands of retailers, and lower prices for many staples than have prevailed for years, the demand for goods has been weak and irregular, and the amount of business done in all branches of commerce much less than was anticipated. The extent of business is indicated very closely by the exchanges at the various clearing houses, of which there are now some sixteen in operation in that number of cities. Of these, thirteen made returns last year, and a comparison is therefore possible as to the amount of transactions represented by bank checks at these thirteen great centers. The total clearings in the first quarter of 1876 were 7,677,000,000, while in the first quarter of 1877 they were 7,550,000,000, showing a decline of 127,000,000. The decline is slight, it is true, but in the face of an expected increase in the volume of business it is not very reassuring.

But it must not be forgotten that for at least two out of three months under review the greatest political uncertainty existed, and that for the remaining month the weather generally has been unfavorable for business. Again, values are less than last year, and if measured by quantities, the transactions would probably show an increase which would more than atone for the slight comparative decline in the transactions represented by the amount of bank checks as above indicated.

But, however much mistaken may have been the expectations for the early part of 1877, there is no doubt but that the past six months has witnessed the early commencement of a better condition of things. If our people could learn, even for a while, to be content with a day of small things, the results of the past quarter would not be disappointing. But unhappily all the arrangements are for business on the grandest scale. Railroads exist to accommodate twice the traffic that offers; warehouses large enough to hold four times the needed supplies of the country, while there is a number engaged in the business of each locality far in excess of its average requirements, and altogether expenses and facilities for an extent of trade only possible in periods of the wildest expansion. These are hardly the true standards by which to measure either safety or real prosperity. Judged by a more reasonable standard, the experience of the first three months of the year has not been a bad one. On the contrary, though business has been small, it has yielded a fair return. In proportion to the amount of business transacted the profits have been better than for many a previous quarter. It is certain business is done at vastly less expense than in former years, that values are more settled, and, above all, that both foreign and internal indebtedness is very materially reduced. This latter fact is clearly illustrated in the decreasing average of liabilities of the quarter's failures, as shown by the foregoing table.

It is hardly an encouraging feature that in the number of failures an increase even so slight should be noticed, but considering the uncertainty in January and February, and the restricted business which has prevailed throughout the quarter, it is rather surprising that the increase is so small. It must be recollected that the decline in the volume of trade, within the past four years, has been much greater than the decline in the number of traders whom it sustains. If the same ratio had prevailed in the number of failures and withdrawals from business, in proportion as business became restricted in extent, it is certain the number of failures would have been much greater, and, so long as business continues without material improvement so long may failures be numerous. Some interesting figures on this view of the situation may be gleaned by comparing the disasters in business with the decline in its extent. For the three years, from the end of 1873 to beginning of 1877, the total number of failures in the United States has been 22,662. This amounts to less than 4 per cent. of those engaged in business at the end of 1873. This is in small proportion to the decline in the volume of trade. It is difficult to arrive at any definite conclusion as to the extent of this decrease, but if measured by the falling off in imports, and the well known decrease in the production of manufactures, the internal business of the country to-day is less by 30 to 35 per cent. than it was in 1873. So that the number of withdrawals from business, by failure or otherwise, is far less than seems either justified or demanded by the decline in the extent of business to be transacted.

Reference has been before made to the evils which the existing bankrupt law produces in facilitating compromises for those who succumb to the pressure of the times. It is undeniable that the operations of this law tend to aggravate the misfortunes of the hour. So long as it exists in its present shape, just so long can the unscrupulous and incapable trader destroy the chance of profit for those that are honest and solvent. No considerable reduction can take place in the army among whom the limited trade of the country is divided, until the law is amended, and no very healthy condition of business is to be expected so long as the number who have to live from it continues as large as it is at present. Now that the political outlook seems so free from disturbing elements, it is surely not too much to expect that some practical legislation on this subject may be initiated even at the extra session of Congress in June.

The early prospect of a practical settlement of the Southern question is regarded as a marked contribution toward a return of more prosperous times. The great staples of this section are of prime importance in the markets of the world, and its power of absorption of goods, especially in view of the small stocks held, is too well known to need comment. If recent events remove the clog from its material progress, and inspire its people with energy to extend their productions and increase their wealth, a better hope may be entertained for the whole country. This, with other indications, are of an encouraging character, and lead to the belief that the worst is past, and if we are favored with another good crop of agricultural produce, the remainder of the year will enable us to mark a substantial progress.

How the Eight Hour System Works in England.—The English spinners are startled by the discovery that the best managed cotton factories in England cannot produce No. 32 yarn at less than 3¼d. per pound, while in France they can produce it for less than 3d. per pound. One reason why is the fact that in France the operatives work 66 hours a week, while north of the Channel they work 56 hours a week. It is proposed to meet this state of facts on the pre-eminently British plan, and missionaries will be sent to agitate among the operatives of France for a reduction of the hours of labor to 56 a week. We also learn that Thorneycroft & Co's Wolverhampton iron works, at Birmingham, are about to be closed, because the enforcement of the eight hour system by the miners has resulted in a continuous loss. About twelve hundred workmen will be thrown out of employment.

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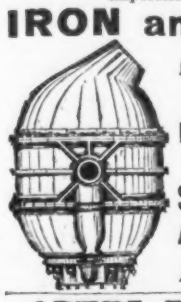
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We hereby certify that Col. H. R. Foote has reduced and removed a Salamander from the hearth of this Furnace weighing over 26 000 lbs., in less than 48 hours, without removing the hearth or injuring the stack, or shoveling out the stock. That his method is an entire success and worthy of the confidence and patronage of all furnace men.
DAVID BIRDSALL, FELIX HUGHES,
WM. MARTIN, HUGH LESLIE,
THOS. GANNON, THOS. HAMMOND.

FOOTE & McNULTY,
Engineers and Contractors
FOR THE
Construction, Remodeling and Repairing of Blast Furnaces,
Are prepared to
Remove Chills, Salamanders, or Scaffolding from Blast Furnaces,
WITHOUT REMOVING THE HEARTH OR INJURING THE STACK,
with promptness and upon reasonable terms.
Machinery and Men in readiness to go to any Furnace and commence operations without delay.
For information address
FOOTE & McNULTY,
The earlier a chill or scaffold is operated upon after its formation, the more rapidly will its reduction be accomplished; but the entire removal of the lump, even after it may have become cold, can be effected by our process very much quicker and cheaper than by blasting. Yours, respectfully,
FOOTE & McNULTY.

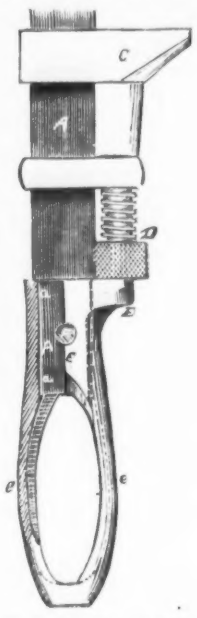
WHITEHEAD BROS.,
Office and Retail Yard, 517 WEST 15TH STREET, NEW YORK. Dealers in all grades
NEW JERSEY, NORTH RIVER, CRESCENT AND ALBANY
MOULDING SANDS.
Also FIRE SAND, FIRE CLAY, KAOLIN and all kinds of
FOUNDRY FACINGS.

New Patents.

We take the following abstract of new patents, recently issued, from the official record:

WRENCH.

To L. Coes, Worcester, Mass.—Jan. 9.—The within described screw wrench, consisting of the headed bar A, made with a short, smooth shank A' of uniform diameter, the sliding jaw C operated by the rosette screw D at the front

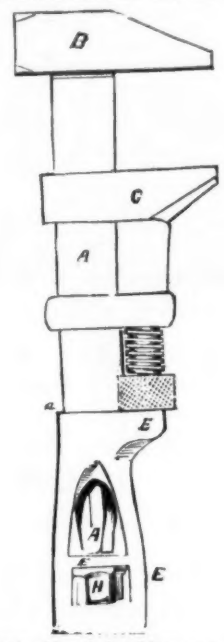


of the bar; the handle E, cast from metal, with side ribs *e e*, step projection E' and body in a single piece, and the pin or rivet F passing through said handle and bar shank, for securing the parts together and sustaining the backward strain of the jaw C.

WRENCH.

To L. Coes, Worcester, Mass.—Jan. 9.—1. The metal handle E, having the step E^2 and nut seat or cross-piece E^1, in combination with the bar A A', rosette screw D and nut H.

2. In combination with the bar A, having



a short shank A' and shoulders *a a*, the metal handle E, made with thin shell or ribs *e e*, and secured to said bar by a separate nut H, screwed on the end of said shank A', within the central part, or interior, of said handle.

186,955.—*Composition Casting Metal for Making Rolls, &c.*—Jno. H. Ricketson, Allegheny, Pa.—Feb. 6.

1. The described composition metal for casting rolls, &c., consisting of cast and wrought iron and spiegeleisen or ferro-manganese.

2. The described process of preparing a compound metal for casting rolls, &c., which consists in alloying cast and wrought iron and spiegeleisen or ferro-manganese on a Siemens furnace hearth.

186,956.—*Apparatus for Pickling Wire.*—C. D. Rogers, Providence, R. I.—Feb. 6.

To economize acid, the space inside of the coils is occupied by a column, which, at the bottom, has four hinged radial arms that support the coils in the vat, but which are permitted to turn and release the coils on turning the central rod used for lifting the column, which permits the inner ends of the arms to pass upward through slots in the disk on the lower end of the rod, against which the ends of the arms had borne.

186,969.—*Process and Composition for Finishing Sheet Iron.*—W. D. Wood, Pittsburgh, Pa.—Feb. 6.

1. The mode of finishing sheet iron by coating the sheets in the process of rolling with a mixture of carbonaceous matter, ammoniacal salt or solution, and suitable fluid, for the purpose of giving the surface a finely glazed appearance.

2. As a coating for sheet iron in the process of finishing, a plastic mixture of carbonaceous matter, and a solution or compound of ammonia.

187,065.—*Sheet Metal Shears.*—G. Summers, Niles, Ohio.—Feb. 6.

The rods are provided with guide blocks, which increase in hight as they are placed farther from the shears, so that sheets of varying width may be operated upon.

187,248.—*Screw Cutting Die.*—Seth W. Bishop and M. Carlyle Johnson, Hartford, Conn.—Feb. 13.

187,294.—*Machine for Heading Bolts.*—G. R. Moore, Philadelphia, Pa.—Feb. 13.

The rod is clamped between the usual dies, and its end is upset by a swinging heading tool, operated by a cam on the balance wheel.

187,288.—*Ratchet Wrench.*—E. A. Leland, New York.—Feb. 13.

The ratchet teeth are held in engagement by the expanding force of a rubber washer.

The following design was recently patented in the U. S. Patent Office:

9690.—*Carriage Top Joint.*—George F. Smith, Plantsville, Conn., assignor to H. D. Smith & Co., same place.—Jan. 2. Term of patent 14 years.

The following trade-marks were registered during the week ending Feb. 13:

4354.—*Wagon Axle.*—D. Arthur Brown & Co., Fisherville, N. H.

"The word symbol 'Vulcan.'"

4359.—*Fluting Machine.*—Susan R. Knox, New York, N. Y.

"A likeness of myself, with a fac-simile of my autograph signature across the bottom thereof."

4362.—*Gunpowder.*—Oriental Powder Mills, Boston, Mass.

"The arbitrarily selected word 'Oriental.'"

Our Lake Marine.

The Detroit *Post* gives the following interesting statistics of the lake shipping:

The growth of our lake marine has been one of the wonderful things in connection with the development of this region. Previous to 1816 the number and tonnage of lake craft was very small indeed. In that year steam was introduced upon Lake Ontario and a year or two later upon Lake Erie. But the growth of commerce was slow. There was but little for vessels to do, and steam navigation was very far from the perfection which it has now attained. It was not until the tide of emigration set Westward that the prosperity of the lake marine was assured. With the settlement of Michigan and the opening up of the Western territory vessels were in demand and found profitable employment. In 1840 there were 48 steamboats on the lakes, the largest being of about 750 tons burden. The estimated cost of these was $2,200,000. There were in that year 250 sail vessels, the largest being of 250 tons. It is estimated that the capital then invested in sail vessels was $1,250,000, making a total investment of lake marine $3,450,000.

In 1845 there were upon the lakes above Niagara Falls 60 steamers, eight of which were propellers; 270 schooners and 50 brigs, with an aggregate of 76,000 tons. There were on Lake Ontario 13 steamers, six of which were propellers, and 100 sailing vessels, with an aggregate tonnage of 18,000. The estimated value at that time was $5,500,000. Ten years later the number of craft on the lakes increased to the following: Steamboats, 110; propellers, 97; schooners, 639; brigs, 101; barks, 33; sloops and scows, 216; tonnage, 237,830. The value was estimated to have reached $10,000,000. From that time onward the growth was very rapid. Three years later the tonnage had reached 387,740, and the valuation $15,000,000. The number of steamers had increased to 312 and sail vessels to 1130.

In 1862 the classification was as follows: Steamers, 396; schooners, 1066; barks, 74; brigs, 85; sloops, 16; total tonnage, 412,127. The value was then estimated to be fully $26,000,000.

The lake marine reached the hight of its prosperity in 1872, when there were 368 steamers, with a tonnage of 172,483; 3208 sail vessels of all kinds, with a tonnage of 310,368, and 1553 barges, with a tonnage of 254,453, making a total of 737,304 tons. The panic of 1873 and the subsequent business depression have told heavily upon the lake trade, but this is believed to be only temporary, like the effect upon other departments of commerce. The number and tonnage of all the craft on the chain of lakes at the close of the year 1876 were as follows: Steam vessels, 885, tonnage, 190,367; schooners, 1282, tonnage, 273,682; barks, 66, tonnage, 24,526; brigs, 16, tonnage, 2945; sloops, 68, tonnage, 4699; scows, 179, tonnage, 8541; making a total tonnage of 504,760, a falling off of over 200,000 tons. The number of steamers has remained about the same and the number of sail vessels has been reduced nearly one-half. The depreciation and decrease in value have been even more.

The *English Mechanic* gives some particulars concerning "rapid transit" in New York, which will be interesting news to our city readers. Speaking of the use of steam instead of horses on tramways, it cites New York as among the cities where this has been successfully attempted. Reference is made to "prismoidal railroads which can be carried through crowded streets with no more hindrance to traffic than a row of pillars in the center." The expressions connected with this reference indicate a belief that there is such a contrivance in this city. The writer goes on to state that "the air line, as it is called, at New York, is well patronized, notwithstanding the counter attractions of the tramways and the underground line." It is evident that what is here referred to is the Greenwich street elevated railroad. It will be news to its patrons that it is called the "air line," that it has a prismoidal track, that it is supported on pillars in the middle of the street, and that it has underground competitors.

During the course of some recent experiments in Paris it was found that a brick of pure Portland cement which had been kept in water six weeks, broke under a tensile strain of 170 pounds to the square inch; but a brick, six months old, which had also been kept under water, broke under a strain of 441 pounds per square inch. The experiments proved that cement hardens more rapidly when exposed to sunlight and fresh air than when affected by humidity, but that this is at the expense of the tenacity and impermeability of the product.

The Iron-Masters' Laboratory.

Exclusively for the Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags & Coal for Practical Metallurgical Purposes.

No. 339 Walnut Street, Philadelphia.

J. BLODGET BRITTON.

This Laboratory was established in 1866, at the instance of a number of practical Iron-masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an ordinary Ore	$4 00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12 50
For each additional constituent of usual occurrence	1 50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur and Phosphorus in Iron or Steel	14 00
For each additional constituent of usual occurrence	6 00
For the per cent. of Carbonate of Lime, and Insoluble Silicious Matter in a Limestone	10 00
For each additional constituent	2 00
For the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12 50

For determining the constituents of a Clay, Slag, Coke, or of an Ash of Coal the charges will correspond with those for the constituents of an ore.
For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.
Printed instructions for obtaining proper average samples for analysis furnished upon application.

C. C. Harlow & Co.,

BRIDGEWATER, MASS.,

Manufacturers of

DAMAN

Standard Hollow Augers,

Universally acknowledged superior to any other in the market. They have recently been improved, making them, as now offered to the trade, the most perfect tools of their kind, either in design, material or workmanship.

Spoke & Dowel Trimmers

The very best as well as cheapest.

Metallic Combination Plow Plane,

Made of solid cast steel and of gun metal. Of an entirely new design. Can be used as Groover, Dado and Rabbet Plane, in any direction of the grain and also as a Match Plane.

Common Sense Door Spring.

The most durable and cheapest Door Spring yet made.

LEAD PIPE CUTTERS.

To cut lead pipe in any position and without chips or burs.

Please send for circulars and prices.

MEDAL AND PREMIUM

Awarded to

T. C. ALCOTT & SON,

Mount Holly, N. J.

For their *Improved*

Turbine Water Wheels.

Territory or right to manufacture For Sale.

GEORGE W. BRUCE,

No. 1 Platt St., New York,

Agent for CLEMENT & MAYNARD,

Offers his usual unrivaled assortment of **Plantation Hoes**, and ask particular attention to their Superior Handled Solid shanked Hoe.

Established 1825.

JOHN P. MOORE'S SONS,

Wholesale Gun Dealers

Everything in the line. Eley's Goods. Colt's Revolvers, etc., etc. Bottom prices guaranteed.

300 Broadway, New York.

Geo. M. Eddy & Co.,

351 & 353 Classon Ave., Brooklyn, N. Y.

Manufacturers of

MEASURING TAPES.

Of Cotton Linen and Steel.

For all purposes for which Tape Measures are required.

Only manufacturers of

Paine's Patent U. S. Standard Steel Measuring Tapes,

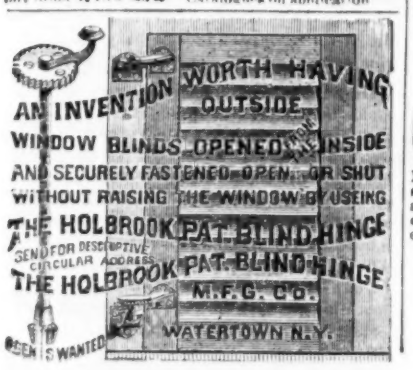
Pat. Spring Measuring Tapes

of Linen and Steel.

FINE TEMPERED STEEL SPRINGS,

FINE TEMPERED STEEL BAND SAWS,

From ¼ inch wide upward. Warranted tougher than any other Band Saw. Catalogues on application.



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CLEVELAND ROLLING MILL CO.,

Manufacturers of

Bessemer Steel & Iron Rails & Fastenings,

SPRING STEEL AND WIRE of all kinds,

STEEL HORSE SHOES, TIRE, AXLES & other Forgings.

Boiler Plate, Galvanized & Black Sheet Iron, Corrugated Roofing & Siding of Siemens-Martin, Bessemer Steel & Iron.

All made from our own Lake Superior Ores. **CLEVELAND, O.**

Agents for the UNION STEEL SCREW CO.

TAYLOR IRON WORKS

WHEELS AND AXLES MADE OF THE BEST STOCK AND IN THE MOST careful MANNER. FURNISHED SEPARATELY OR "FITTED" MAKING COMPLETE SETS.

ON THE LINE OF THE CENTRAL R.R. OF NEW JERSEY

HIGH BRIDGE, N.J.

CAR WHEELS & AXLES

DRAW HOOKS AND FORGINGS.

LEWIS H. TAYLOR PRES'T. S. P. RABER SUP'T. JAS. H. WALKER SEC'Y & TREAS.

NEW YORK OFFICE 93 LIBERTY ST.

STEEL TIRED WHEELS MADE UNDER SAX & KEAR'S PATENT FOR LOCO TRUCK AND TENDER AND PASS'R CAR SERVICE.

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PROPRIETORS OF THE

Pottsville Rolling Mills & Pioneer Furnaces

POTTSVILLE, PENNSYLVANIA.

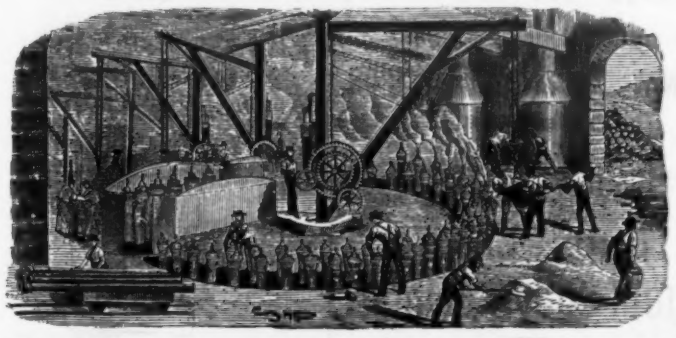
Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their Iron from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to produce

T and STREET RAILROAD IRON,

Of all Patterns and of uniform quality, unsurpassed for strength and wear, and of any required length.
Address the Proprietors, Pottsville, Pa.

McNEALS & ARCHER,

BURLINGTON, N. J.



Flange Pipes. General Foundry Work.

CAST IRON PIPES

FOR WATER AND GAS.

JOHN H. REED & CO.,

IRON MERCHANTS,

And Agents for BAY STATE IRON CO.,

Manufacturers of and Dealers in

Homogeneous Boiler & Fire Box Plates, Plate, Sheet, Pig & Railroad Iron. Wrought Iron Girder, Channel & Deck Beams.

ANGLE and T IRON, BOILER and TANK RIVETS, Lap-Welded Iron Boiler Tubes, Wrought Iron Steam and Gas Pipe.

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IRON FOUNDRY.

ESTABLISHED IN 1840.

SAMUEL J. CRESWELL, Jr.,

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PHILADELPHIA.

Iron Fronts, Stairs, Girders, Lintels, Columns, etc

THE SWIFT MILL.

ESTABLISHED 1845.

The annexed cut shows one of the many styles of Coffee Mills of our manufacture, especially adapted to Grocers' use and all retailers of coffee. They are highly ornamental, and workmanship of the very best. We make more than 30 styles.

Also Lane's Portable Coffee Roaster

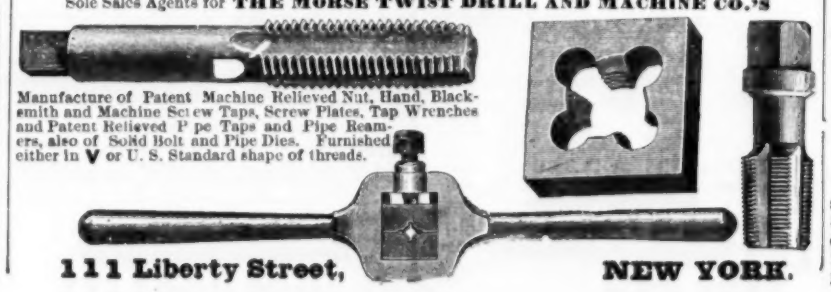
Will roast 30 to 40 lbs. at once, and can be used as a stove at other times. Send for descriptive list to Manufacturers

LANE BROS., Millbrook, N. Y.

Also sold by leading wholesale houses.

H. S. MANNING & CO.,

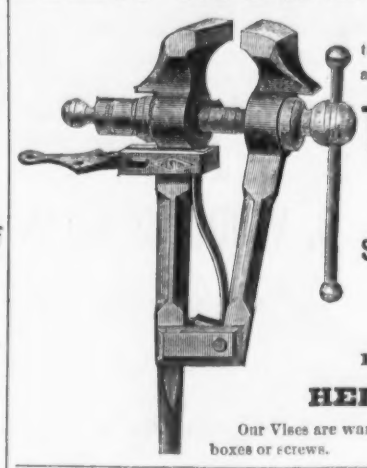
Sole Sales Agents for **THE MORSE TWIST DRILL AND MACHINE CO.'S**



Manufacture of Patent Machine Relieved Nut, Hand, Blacksmith and Machine Screw Taps, Screw Plates, Tap Wrenches and Patent Relieved Pipe Taps and Pipe Reamers, also of Solid Bolt and Pipe Dies. Furnished either in V or U. S. Standard shape of threads.

111 Liberty Street, NEW YORK.

NEW MODEL SWIVEL VISE.



The advantage claimed for this Vise over the ordinary patterns is in the ease with which it is adjusted to whatever angle may be required.

Trenton Vise & Tool Works

TRENTON, N. J.,

Manufacturers of

Solid Box Vises, Hammers, Sledges, Picks, Mattocks, Grub Hoes, &c.

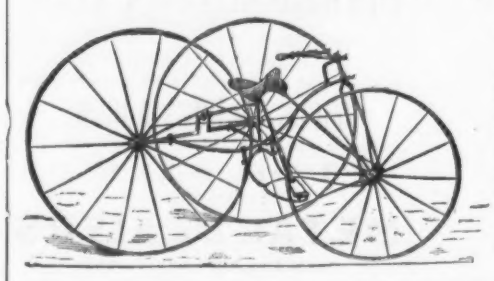
Warehouse,

101 & 103 Duane Street, NEW YORK.

HERMANN BOKER & CO.

Our Vises are warranted to do more work than any other make. No broken boxes or screws.

The Sheridan Velocipede.



Patented in U. S., Aug. 24, 1876; in England, Aug. 12, 1876; in France Nov. 6, 1876.

The SHERIDAN VELOCIPEDE meets every requirement in this line. By its method of construction, entirely different from that of any other Velocipede, it affords invigorating exercise for the whole physical system. Other Velocipedes are propelled solely by the action of the feet, which soon become weary, making the effort to ride painful rather than pleasurable. The Sheridan is propelled by the weight of the body of the rider, together with the feet, transmitting power directly to the axle, as shown in the accompanying cut. The Velocipede is especially adapted to the use of athletic clubs, colleges and schools.

CROSBY, GILZINGER & CO.

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PIG IRON, Wm. Penn, Norristown and Reading Furnaces.
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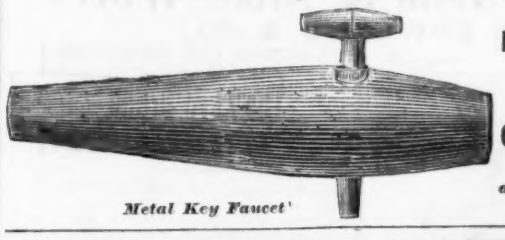
READING NAIL AND IRON CO.'S (Crescent Brand) Nails, Brads and Spikes.
BARROW, SAVERY & CO.'S Tinned, Enameled and Plain Hollow Ware, Medium and Carron Hollow Ware, Sad, Tailors' and Laundry Irons, Fire Dogs, Wagon Boxes, Savery's Patent Combined Enameled Water Cooler and Refrigerator, &c., &c.
PENNSYLVANIA CORUNDUM CO.'S Corundum in Casks and Packages.
WASHINGTON MILLS EMERY CO.'S Best Turkish Emery in Casks and Packages.
FISHER & NORRIS' Patent American Anvils and Vises.

MALTBY, CURTISS & CO.,



Metal Key Faucet

Manufacturers of

Metal Key Maple & Rosewood FAUCETS.

Also Manufacturers of

Capewell's Giant Nail Puller,

THE BUELL PEG FLOAT

and the Victor Knife Sharpener.

34 READE ST., N. Y.

CAST BRASS BUTT HINGES,

Brass Rim & Mortise Locks, Ice House Hinges & Fastenings.

Manufactured and for sale by

W. & J. TIEBOUT,

MANUFACTURERS OF

Brass, Galvanized and Ship Chandlery Hardware.

290 PEARL STREET, NEW YORK.

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Cast Butts,	Wrought Butts,
Strap and T Hinges,	Sad Irons,
Pulleys,	Casters,
Knobs,	Wagon Boxes,
Thimble Skeins,	Piano Stools,

Knox and Universal Fluting Machines, Etc., Etc., Etc.

And Jobbers of GENERAL HARDWARE.

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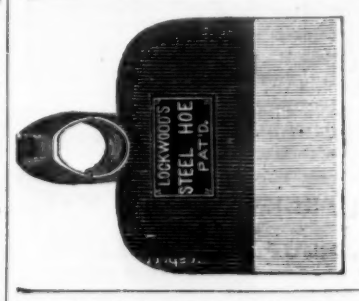
FACTORIES, Jeffersonville, IND., Camp Washington, O.



O. H. HICKS & CO.,

Manufacturers of the

"Lockwood" Steel Hoe

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The "Wall Protector" Match Safe,

An Article of Unusual Merit.

Send for sample and prices.

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Successor to W. F. SHATTUCK & CO.,

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AMERICAN HARDWARE.

100 Chambers Sts., New York,

Shattuck's Union and Counter Scales.
Phelan's Axes, Hatchets, Picks, &c.
Wellman's Gimlet's, Gimlet Bits, &c.
Griswold's Augers, Auger Bits, &c.
Holroyd & Co.'s Stocks and Dies.
Yaw's "Genuine" Wrought Cow Bells.
Barton's Hand and Sleigh Bells.
Maltby's Britannia and Cocoa Dippers.
Eddy's Refined Lamp Black.
"Eagle" Axe, Pick and other Handles.
"Eureka" Flint, Sand and Emery Papers.
Cortland Forged Horse Nails.
Tackle Blocks, Spokes, &c., &c.

HARDWARE AT THE CENTENNIAL.

Report of the Judges of Group 15.

(Continued.)

The following is a transcript of the official report of the Judges of Group 15, Centennial Exhibition, including hardware:

INTERNATIONAL EXHIBITION, 1876.
UNITED STATES CENTENNIAL COMMISSION,
BUREAU OF AWARDS, GROUP 15,
PHILADELPHIA, June 6, 1876.

Judges met at 9 a. m., in room, and proceeded to examine exhibits of Canada.

47. Dates Patent Steel Co., Toronto, Canada. Axes, hatchets, chisels, adzes, cleavers, &c.; excellent quality and styles. Recommended for award of merit.
48. J. Hourigan & Son, Dundas, Ontario. Axes of good quality and finish.
49. Joseph Warnock & Co., Galt, Ontario. Axes, hatchets, picks, draw knives, hammers, &c. Large assortment, excellent design and superior workmanship. Recommended for award of merit.
50. W. & M. Ahearn, Ottawa, Canada. Lumberman's tools of good quality, finished for exhibition. Recommended for award of merit.
51. Peter Robertson, Ottawa, Canada. Lumberman's and stone cutters' tools, of good and serviceable quality; taken from stock. Recommended for award of merit.
52. Thomas Moore, Cooksville, Ontario. Ax and tool handles, well made and excellent material. Recommended for award of merit.
53. Griffith & Co., Toronto, Ontario. Locks and latches, with gravitating handles; patented. No remarks.
54. R. H. Smith & Co., St. Catherines, Ontario. Mill, cross-cut, circular and other heavy saws; also hand saws, back saws, wood saws, trowels, &c; good quality, well finished and meritorious. Recommended for award of merit.
55. Spiller Bros., St. John, N. B. Axes, hatchets, edge tools, &c.; uniformly good in quality and finish. Recommended for award of merit.
56. E. Broad, Milltown, N. B. Axes, hatchets, adzes and chisels. Well made, useful and commendable goods.
57. J. A. Whelply, Greenwich, N. B. Skates with patent fastenings; fair quality and finish.
58. W. Brisby, Toronto, Ont. Patent fasteners for floors, sidewalks, &c. No remarks.
59. S. R. Foster & Son, St. John, N. B. Nails, tacks, brads, &c., from stock; large assortment, well made, fair merchantable goods. Recommended for award of merit.
60. Pillow, Hersey & Co., Montreal, Canada. Nails, tacks, brads and spikes for all purposes; also, machine-made horseshoes of superior quality. Recommended for award of merit, on account of nails, tacks, brads and spikes.
61. Cowan & Britton, Gananoque, Ont. Strap and other hinges. Good, fair quality.
62. Starr Mfg. Co., Halifax, N. S. Nails, spikes, dies, &c. for cans; presses, bolts, rivets and washers of fair quality; also, Forbe's patent Acme Club skates in great variety, of excellent quality and finish. Recommended for an award of merit for skates.
63. E. L. Fenerty & Co., Halifax, N. S. Skates with patent fastenings. Good quality and finish.
64. H. R. Ives & Co., Montreal, Canada. Cast iron bolts, latches, fastenings, &c. Also of plated coffin furniture, of ordinary quality and finish.
65. Canen Gilmore, Montreal, Canada. Augers, bits, &c., of superior style and finish. Recommended for award of merit.
66. A. S. Whiting Mfg. Co., Oshawa, Ont. Forks, hoes, scythes, straw knives, &c., of the highest quality, patterns and finish; highly commended. Recommended for award of merit.

Adjourned to meet to-morrow at room at 9 a. m.

PHILADELPHIA, June 7, 1876.

Judges met at 9 a. m. at room, and proceeded to finish exhibit of Canada.

67. Boivine & Co., New Liverpool, Quebec. Axes, picks, hatchets, adzes, hammers, &c., of fair quality and finish.
68. J. Percy. Horseshoes, excellent finish; hand-made.
69. Patrick Clark. Horseshoes; hand-made. No remarks.
70. James Wall. Horseshoes; hand-made. No remarks.
71. C. R. Bell. Horseshoes; hand-made, good and well made. No further remarks.
72. D. F. Jones & Co., Gananoque, Ont. Shovels, spades, forks, &c.; good heavy quality.
73. Colebrook Rolling Mill Co., St. John, N. B. Cut and annealed nails; large assortment and common quality.

Adjourned to meet to-morrow, 8th inst., at room, at 9 a. m.

PHILADELPHIA, June 8, 1876.

Judges met at room at 9 a. m., and proceeded to Great Britain examinations with result as follows:

74. J. B. Addis & Sons, Sheffield, G. B. Carvers' tools. A very fine display of carvers' tools of many forms and designs, and of superior finish. Recommended for award of merit.
75. James Burnand & Co., Sheffield, G. B. Fine cutlery, table and pocket knives, hunting knives, dirks, &c., of excellent quality and finish and large assortment. Recommended for award of merit.
76. Patent Nut and Bolt Co., Birmingham, G. B. Large assortment of bolts (plain and finished), nuts, spikes and rivets, clinch rings, washers, &c., of excellent material and admirable workmanship. Recommended for award of merit.
77. Robert Adams, London, G. B. Spring hinges and adjustable shoe and bolts for French cases. No remarks.
78. Brooks & Crookes, Sheffield, G. B. Fine pocket knives, scissors, razors, table knives, &c.; in great variety and of elegant finish. Recommended for award of merit.
79. George Wostenholm & Son, Sheffield, G. B. Pocket knives, razors, scissors, &c.; unsurpassed in quality, finish and beauty of style. Recommended for award of merit.
80. Wilson, Hawksworth, Ellison & Co., Sheffield, G. B. Converters of steel, makers of files and steel wire, and manufacturers of pocket and table cutlery, scissors, butcher knives, steels, chisels, plane irons, &c.; excellent in quality; manufactured goods well finished and of desirable descriptions. Recommended for award of merit.
81. Ward & Payne, Sheffield, G. B. Chisels, braces and bits, carvers' tools, sheep shears, draw knives, plane irons, screw drivers, &c.; a very creditable display; goods well finished and of good quality. Recommended for award of merit.
82. William Baker, London, G. B. Turn screws, bits, mattress and bailing needles, awls, &c.; in great variety, good quality and styles. Recommended for award of merit.
83. John Needham, Sheffield, G. B. Metal handle table and hunting knives. No remarks.
84. Mayer & Meltzer, London, G. B. A large variety of pocket knives, scissors, razors, &c.; fine goods of good quality and finish. Recommended for award of merit.
85. Thomas Francis & Co., Birmingham, G. B. Malleable shoe and other nails; a creditable display.
86. Christopher Baker & Sons, Birmingham, G. B. Coffin trimmings and door fittings; well finished, handsome goods. Recommended for award of merit.
87. John Neal & Co., London, G. B. Pyro-silver cutlery, table knives, forks, spoons, &c.; patent combination of silver and steel; tasteful designs and beautiful finish.
88. Wm. Smith & Son, Warrington, G. B. Flyers, nippers, vises, dividers, &c.; good, well made, serviceable tools. Recommended for award of merit.
89. C. Carmoy, Paris, France. A very great variety of upholsterers' and decorators' nails and ornaments in steel, iron, bronze and brass, exceedingly tasteful in design and finish. Recommended for award of merit.

Judges, after making arrangements to visit Agricultural Hall to-morrow, 9th inst., to finish exhibition of Great Britain, adjourned.

PHILADELPHIA, June 9th, 1876.

Judges met at 9 a. m. at room, and proceeded to Agricultural Hall, pursuant to adjournment, prior to which they inspected deposit of

90. Henry Brooks & Co., London, G. B. Collapsible tubes and patent metallic stoppers for painters. Believed to belong to another group.

AGRICULTURAL HALL.

91. William Wilkinson & Sons, Sheffield, G. B. Sheep shears, garden shears, &c.; an extensive variety, suitable for the different markets, of 1st quality and finish. Recommended for award of merit.
92. A. W. Wills, Birmingham, G. B. Axes, hoes, picks, bill hooks, &c.; good and well finished, of various patterns.
93. James Fussell & Sons, Somersetshire, G. B. Scythes, grass hooks, &c.; good, plain finish and quality. Believed to belong to another group.

Adjourned to meet Monday at 9 a. m., to proceed to examine deposits of Sweden as per arrangement.

PHILADELPHIA, June 12, 1876.

Judges met at 9 a. m. this morning at room On this occasion Mr. Bain, of Scotland, appeared, and entered upon his duties as judge, thus completing the group. After reading several communications judges made a visit of inspection, with results as recorded, to Sweden:

94. Stridsberg & Biorck, Forshalla, Sweden. Mill, cross-cut, circular and other saws, trowels, straw knives, &c. No remarks.
95. B. & O. Liberg, Eskilstuna, Sweden. Shears, scissors, chisels, plane irons, gouges, planer knives and skates; articles of good quality; some finely finished; prices moderate. Recommended for award of merit.
96. A. G. Gustafson, Eskilstuna, Sweden. Pocket knives of ordinary quality.
97. F. W. Soderen, Eskilstuna, Sweden. Scissors and shears; a beautiful assortment, remarkably well finished and of good quality. Recommended for award of merit.
98. J. A. Lafquist, Eskilstuna, Sweden. Daggers, &c.; well finished goods.
99. Yunmanufactur, Actu Bolaz, Eskilstuna, Sweden. Hunting knives and daggers; very fine goods, well finished and at low prices.
100. C. V. Heljestrand, Eskilstuna, Sweden. Razors; a fine display, and well finished.
101. C. Alfred Novostrone, Eskilstuna, Sweden. Dirks.; an assortment beautifully finished; high in price.
102. Yoh Engstrone, Eskilstuna, Sweden. Razors; finely finished.
103. L. F. Stahlberg, Eskilstuna, Sweden. Table knives, kitchen knives, &c., some of which are well finished.
104. F. E. Lindstrone, Eskilstuna, Sweden. Cutting nippers, pliers, pinchers and shoe punches; excellent quality and finish; prices low. Recommended for award of merit.
105. Yoh Wahlen, Eskilstuna, Sweden. Pad and closet locks. No remarks.
106. A. Halling, Eskilstuna, Sweden. Hunting knives, kitchen knives and dirks; excellent quality and finish, and at low prices. Recommended for award of merit.
107. J. Biorck, Eskilstuna, Sweden. Malleable iron shears, wrenches, lathe dogs, clamps, axle nuts and hammers; of good quality of material.
108. H. Lagerbach, Eskilstuna, Sweden. Door and closet locks; well made and finished.
109. C. M. Lostrone & Co., Eskilstuna, Sweden. Files and rasps; a good assortment, well cut.
110. C. O. Oberg & Co., Eskilstuna, Sweden. Files and rasps; a large variety, well cut.
111. Seth Fr. Yernberg, Eskilstuna, Sweden. Door, chest and closet locks, bolts, &c.; well finished, but unnecessarily heavy.
112. G. Nilsson, Eskilstuna, Sweden. Blacksmiths' vises of fair quality.
113. Fagersta Steel Works, Westanfors, Sweden. Mill, cross-cut, circular and pit saws and stone hammers; made of Bessemer steel, of good quality and finish. Recommended for award of merit.
114. Sandrik Iron and Steel Company, Gefle, Sweden. Razors, knives and scissors of good quality.
115. J. O. Sundstrom, Charlottensburg, Sweden. Railway and common spikes and nails; material of excellent quality.
116. F. H. Kockum, Sweden. Spikes, nails, brads, shoe nails, &c.; of good material and finish.
117. A. Robson, Aspa Askusand, Sweden. Ship and common spikes; of good quality and well made.
118. Lesjofoos Iron and Steel Company, Philipstadt, Sweden. Wire nails, brads, tacks, &c.; in great variety and of very superior quality. Recommended for award of merit.
119. Albert Stille, Sweden. Razors and pocket knives; a small assortment.
120. W. Wiklund, Stockholm, Sweden. Door handles, hat and coat hooks and hose couplings. No remarks.
121. G. Ersicksson, Elskilstuna, Sweden. Ventilators and dampers. No remarks.
122. Af. Hendengoun. Elskilstuna, Sweden. Shovels and tongs, curry combs, &c. No remarks.
123. F. A. Steuman, Eskilstuna, Sweden. Locks, latches, bolts, &c., of fine finish and quality. Recommended for award of merit.
124. Joh Hedlund, Sweden. Screw padlocks, of ordinary quality, cheap in prices.
125. E. Stralling, Sweden. Pocket knives, common quality.
126. New Gallsard Co., Sweden. Cut nails, &c. No remarks.

Judges adjourned to meet to-morrow, 13th inst., at 9 a. m., in room, to proceed to American Department in Main Building, as per notice given on Friday last.

Preparations are being made at the celebrated works of Herr Krupp for extensive experimental trials with a fifteen centimeter (six inch) gun. At the same time experiments are to be carried on against armored guns, for the purpose of determining what chances there are for the besieger of disabling a gun thus protected.

USE THE BEST.

Pawtucket, R. I.

The American File Company have the exclusive right to use the Bernot process for cutting files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing files and steel.

Goods of all known manufacturers have been repeatedly tested, and interesting tables have been compiled showing the working qualities of files made by different makers, and of files made from different steels, and with various shapes and angles of tooth. They have thus reduced the manufacture of files to an exactness and perfection with a uniformity of result, as they believe, never before attained No file, foreign or domestic, that they have ever tested, has equalled the performances of their own goods taken at random from their stock. Their machines are capable of the most delicate adjustment, and can produce the very finest work known to the trade. Special files made to order. Prominent file manufacturers are having their best goods from our works.

Price lists and information furnished on application.

AMERICAN FILE CO., Pawtucket, R. I.

THE BEST IS THE CHEAPEST.

McCaffrey's Standard American Hand Cut Files and Rasps are warranted to do more work than any other files and rasps in the market.

SILVER MEDAL TRADE MARK, HIGHEST PREMIUM.

PENNSYLVANIA FILE WORKS.

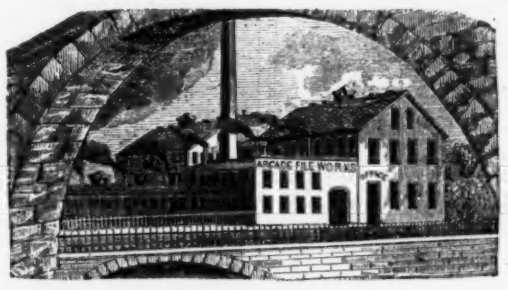
McCAFFREY & BRO.,

No. 1732, 1734 & 1736 North Fourth St. Phila.

Messrs. ARNOLD & CO., 310 California St., San Francisco, Sole Agents for the Pacific Coast.

ESTABLISHED 1848.

C. T. DRAPER & CO.
Sing Sing, N. Y.
Manufacturers of SUPERIOR
HAND CUT



FILES and RASPS
Made from Best
ENGLISH CAST STEEL.
Quality guaranteed by written warranty when required.

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

89 Chambers and 71 Reade Streets, N. Y

THE CONNECTICUT VALLEY MFG. CO.,

CENTERBROOK, CONN., Manufacturers of

Lewis' Patent Single Twist Spur Bits,

GERMAN GIMLET BITS, etc.

Send for our illustrated price list and discounts.

JOB T. PUGH'S

Celebrated AUGERS and BITS.

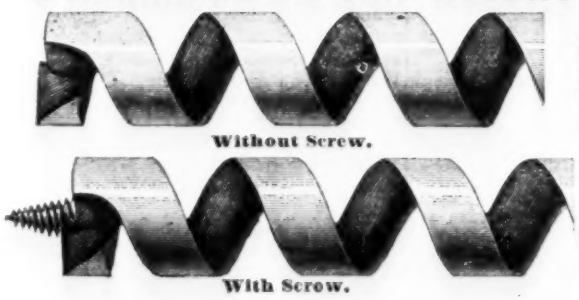
WARRANTED SUPERIOR TO ANY OTHER MAKE.

They are made entirely by hand, and are especially adapted to hard wood. Supplied to the trade only. Gas Fitters', Millwrights', and Carpenters' Augers and Bits. Machine Bits of all descriptions made at short notice.

Office and Works,

Rear of Nos. 3112, 3114, 3116, 3118 & 3120 Market Street, Philadelphia, Pa.

L'HOMMEDIEU'S SHIP AUGERS AND BITS.



Without Screw.

With Screw.

We would call the attention of the trade to this celebrated make of Ship Augers and Bits. They are equally well adapted to the work of **Bridge Building and Railroad Mechanics** as that of Shipbuilding.

E. H. TRACY,

Sole Manufacturer,

With

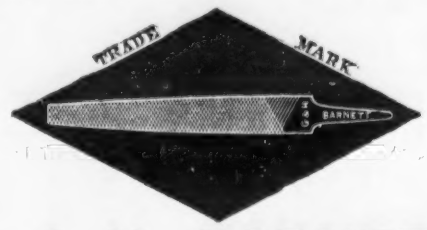
C. E. Jennings & Co.

OFFICE,

98 Chambers St., N. Y.

Black Diamond File Works.

Send for Illustrated Price List.



Send for Illustrated Price List.

G. & H. BARNETT,

39, 41 & 43 Richmond St., Philadelphia.

St. Louis, Mo., SEMPLE & BIRGE MFG. CO., Agents.
THOS. TAYLOR, 43 Chambers St., N. Y., Agent for N. Y. and N. E. States.

THOS. JOWITT & SONS, SHEFFIELD,

Manufacturers of every description of

FILES.

Forged, Ground and Cut by Hand and Tempered by an Improved Process.

Manufacturers of

CAST, SHEAR & BLISTER **STEEL**

For various purposes.

CORPORATE MARK

ROLLERS, TILTERS & FORGERS.

Importers of

SWEDISH and RUSSIAN **IRONS.**

Granted according to Act of Parliament, and Registered in Germany and the United States.

AGENTS:

Messrs. Russell & Erwin Mfg. Co., *New York and Philadelphia.*
Messrs. Huntington, Hopkins & Co., *San Francisco and Sacramento.*
Messrs. Quackenbush, Townsend & Co *New York.*
Messrs. Frothingham & Workman, *Montreal.*

ELIAS G. HELLER. PETER J. HELLER. GEO. E. HELLER. JOHN J. HELLER.

HELLER & BROS. T M NEWARK, N.J.

We invite the attention of the trade to our **Celebrated American**

Horse Rasps and Files,

made from the very best American Steel, all cut by hand, and warranted to give entire satisfaction. If requested, we will send sample lots, to be returned or held subject to our order, free of all charges, if not found as represented. All Rasps not stamped as the annexed incorporated trade mark are not genuine. Sold by Hardware dealers generally.

FILES & RASPS,

Established 1808.

Best Cast Steel.

HAND-CUT. Manufactured by

JOHNSON & BRO.

No. 1 Commercial Street, Newark, N. J.

Established 1835. **TRADE MARK ON**

JOHN ROTHERY T M MATTEAWAN N. Y.

New Pattern

Horse Rasps,

John Rothery's

HAND-CUT FILES and RASPS,

Made from English Cast Steel.

JOHN & WILLIAM ROTHERY,

Matteawan, N. Y.

Putnam's Government Standard

FORGED

Hammer Pointed

HORSE SHOE NAILS,

READY FOR DRIVING.

Manufactured from the best of **NORWAY** Iron, and warranted to give entire satisfaction.

S. S. PUTNAM & CO.,

NEPONSET, MASS.

SCOTT'S Standard Bellows

J. CLARK WILSON & CO., Agents, 81 Beekman Street, N. Y.

586 Water St., N. Y.

Manufacturers of NEWCOMB BROS.,

TUCKER & DORSEY,

MANUFACTURERS.

Agents, GRAHAM & HAINES, 113 Chambers & 95 Reade Sts., N. Y.

Indianapolis, Ind.

ESTABLISHED IN 1816.

NO CONNECTION WITH ANY OTHER HOUSE.

PETER A. FRASSE & CO.,

No. 95 Fulton Street, New York.

AGENTS for the American Screw Co.'s Machine Screws and Taps.
SOLE AGENTS Thos. Turner & Co.'s, Files, Horse Rasps.
" " Hubert's French Emery Paper.
IMPORTERS OF STUBS' Files, Tools, Steel Wire.
" " GROBET'S Fine Swiss Finishing Files.
" " VAUTIER, NICOUD and RENARD Gravers.
" " JEWELERS' and Machinists' Supplies.
DEALERS IN Scroll-Saw Machines, Bracket Saws, Wood and Patterns.

CHARLES B. PAUL,

Manufacturer of HAND-CUT **FILES.** Warranted CAST STEEL.

187 Tenth Street, Williamsburgh, New York.

All descriptions of Files made to order. Price List mailed on application. Established 1863

AUSABLE HORSE NAILS

POLISHED OR BLUED.

HAMMERED AND FINISHED

The Ausable Nails

Are Hammered Hot,

And the Finishing and Pointing are Done Cold,

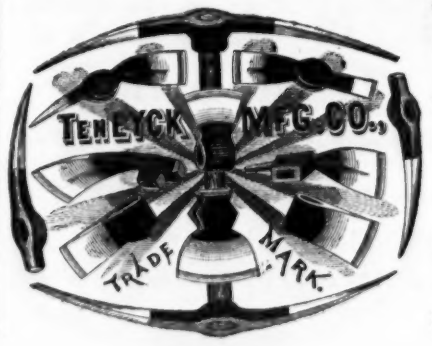
Thus Imitating the Process of Making Nails by Hand.

Quality is **Fully Guaranteed.**

For Sale by all Leading Iron and Hardware Houses.

ABRAHAM BUSSING, Secretary,

35 Chambers St., New York.



Ten Eyck Axe Mfg. Co

COHOES, N. Y.

Warehouse, 103 Chambers St., N. Y.

Manufacturers of

AXES

Of all kinds.

Hatchets, Adzes, Grub Hoes, Mattocks and Picks.

Catalogues and Price Lists furnished upon application.

INDUSTRIAL ITEMS.

MASSACHUSETTS.

The new wire mill at Charlton is finished.

Smith & Wesson, the pistol makers, Springfield, are about to make an addition to their factory 100 feet long and four stories high, the building of which has already begun. The company are now employing about 600 men, with a prospect of keeping that number busy through the season, while the addition, when completed, will swell the capacity of the factory to nearly 900 hands.

CONNECTICUT.

The factory of the American Knife Company, at Thomaston, was burned last week, throwing 100 hands out of work; loss $40,000. They will rebuild it immediately.

The National Wire-bed Company are to have a new factory at New Britain.

Pitkin Bros., Hartford, received an order last week from Cuba for two large sized boilers for a sugar firm there. The boilers are to be 72 inches in diameter and 36 feet long. This order, when completed, will make seven sets of boilers which this firm have sent out to Cuba.

At a meeting of the creditors of the Birmingham Iron and Steel Works, and the wire works in East Haven, held recently, a committee reported the financial condition of the companies, and it was decided that a resort be made to bankruptcy proceedings for a settlement of affairs.

Pratt, Read & Co., ivory manufacturers, at Deep River, will probably have over a hundred men in their employ as soon as the first of May, and indications are that their business will be better this season than it has been for the last two years.

NEW YORK.

The steel works at Troy have resumed work, the break in the machinery having been repaired.

The Knickerbocker Scythe Works, at Ballston, are now being run at their fullest capacity, and turn out 100 dozen scythes per day, which is at the rate of 15,000 dozen per year. The ax works of the same concern are also running at their fullest capacity to keep pace with the orders. Two hundered men are employed in both works, and the pay roll calls for $2000 weekly.

The Hayes Patent Ventilating and Fire-Proof Skylight Manufactory, No. 71 Eight avenue, is working to its fullest capacity. This concern was awarded a medal and a diploma by the Centennial Commission, "for the ingenuity displayed in the construction of the various articles based on sound principles, and especially for the perfection arrived at in the construction of skylights." In addition to skylights, Mr. Hayes has now in full operation the manufacture of perforated sheet metals, for milling and mining purposes, ventilators, strainers, malt kiln floors, &c., which is claimed to have many advantages over woven wire cloth, being less liable to injury. The machinery erected for this purpose will perforate sheets of 40 inches wide and of any length.

PENNSYLVANIA.

John Wood & Co., of Conshohocken, have received an order for boilers and castings for a new rolling mill in New York, which will keep their works running a long time.

Last week the stack of the Lehigh Iron Co's. Furnace yielded an average of nearly 40 tons a day, mostly No. 1 foundry.

Clark, Reeves & Co., of Philadelphia, declining to sign the contract for the Tennessee River bridge, on the Cincinnati Southern Railroad, the contract was awarded to the Louisville Bridge and Iron Company. The bridge is to be 1800 feet long.

The Weimer Machine Works have lately made a contract for a blowing engine and hot-blast for the Licking Iron Co., of Newark, Ohio, and a blowing engine for the Ogden Iron Co., of Chicago, Ill. Both of these engines are of 300 horse-power, and are of the new style short stroke, high speed class, patented by Mr. Weimer, which are received with such marked favor.

Work on the new steel works at Lamnkin is to be begun at once.

Four puddling furnaces have been torn down at the Glasgow Iron Works, but are to be rebuilt immediately.

The Towanda Nail Works are about to be put in operation again.

The Altoona Rolling Mill has suspended for a few weeks for repairs.

It is rumored that the Cambria Iron Co. have leased Matilda Furnace, in Mifflin county, and will shortly put the same in blast.

The Pennsylvania Steel Co., Baldwin, announce a dividend of $3 per share.

The Pottstown Iron Co. are engaged filling an order for plate iron for a number of vessels being erected at Roach's shipyard, at Chester. The work is being pushed forward as rapidly as possible.

At the Westerman Iron Co.'s Mill, Sharon, they are using "Leonard's screener" for picking nails. The work is done during the process of bluing, instead of, as with the Coyne picker, as the nail comes down the chute from the cutter.

The Franklin Furnace (charcoal) went out of blast the 1st of April, and will blow in about June.

The Howard Furnace (cold-blast charcoal) is in blast and is making a very superior quality of iron.

The Emma, Hecla and York charcoal furnaces have been abandoned.

Within the past few weeks 600 tons forge and 1000 tons foundry iron have been sold from the yard of the Penn Warehousing Co., at Reading.

The Monocacy Furnace has gone into bankruptcy; Joseph Wright, of Philadelphia, assignee.

The Enterprise Mfg. Co., of Philadelphia, are working up to their fullest capacity, employing over 200 hands. Orders are increasing, and all the indications point to a continued active trade. They have recently put in a new 50 horse-power engine to supply power for polishing Mrs. Potts' sad irons, the demand for which is so great that they find difficulty in promptly supplying the wants of the trade.

PITTSBURGH AND VICINITY.

Messrs. Riter & Conley are building four boilers for the Lucy Furnace, 48 inches by 61 feet. They will be placed in two batteries. Each battery has seven mud drums, 8 feet 7 inches long by 36 inches.

The coal operators in the Connelsville coke regions refuse to accede to the demands of the miners, and the strike continues. By shutting down the mines, between eight hundred and a thousand hands are added to the already large army of idlers.

The Dunbar Furnace has had hard luck since it blew in. The strike of its miners and coke drawers, the destruction of the pneumatic hoist, and the partial chilling of the furnace, is a bad commencement, but the old adage may be true. We hope so.

The large rolling mill property of the bankrupt firm of Glass, Neely & Co. was bought in by lien creditors for $60,000 at a sale.

Thos. Wightman & Co. are changing one of their window glass factories at West Pittsburgh to a 10 pot bottle factory. They expect to make 1000 dozen fruit jars per day in this new factory.

A. Garrison & Co. are constructing an 8 inch and a 16 inch merchant mill for the Baugh Steam Forge Co., of Detroit.

The foundry firm of Hay, Shinkle & Miller has dissolved, Mr. John Hay retiring. A new firm has been formed under the title of Wilcox, Shinkle & Miller.

The largest machinery casting ever made west of the Alleghenies was successfully poured a few days since by Totten & Co. Seventy-six thousand pounds or 38 tons of metal were melted for it. The casting is for use in making plate glass, and when completed will be 22 feet long, 11 feet wide and 8 inches thick. It is planed on one entire surface, and requires the use of a very large planer. The plate was ordered by Col. Ford—the pioneer in this country in the manufacture of plate glass—and is for use in the new works at Jeffersonville, Indiana. Messrs. Totten & Co. have also under way plain chilled rolls requiring 20,000 pounds each to cast them, and grooved chill rolls weighing 6000 each.

There is no new feature in the strike of the window glass workers. They are still out, with little if any prospect of an adjustment of the difficulty.

Lane Bros. have removed to their new quarters, 263 Liberty street.

The Soho Furnace is to be relined at once preparatory to blowing in, if thought best.

The Shoenberger Furnace has made 430 tons of iron in a week. This is the "boss" for a 13 foot furnace.

There are five furnaces in blast in Pittsburgh, viz.: one stack Isabella, the Lucy, one stack Shoenberger, the Clinton, and one stack Eliza. Six are out of blast.

The Keystone Nut and Bolt Works, F. M. Haslett & Co., are running full, with a large number of orders ahead.

The Western File Co.'s Works, at Beaver Falls, are running full. During the past two and a half months they have been busier than at any time during the past three years. They are shipping files to Australia and Canada.

S. D. Hubbard & Co. have recently put up one of their Eclipse steam pumps at the works of Graff Bennett & Co.; one at J. S. Finch's Brewery; one at the steel works of Smith, Sutton & Co., and one at A. J. Nellis & Co.'s. Since Jan. 1st 28 of these pumps have been sold, some of the largest size. These pumps received a medal and diploma at the Centennial.

D. W. C. Carroll & Co. are building a large iron boat for the Mississippi jetty, with two batteries of boilers 24 feet by 43 inches.

Messrs. Robinson, Rea & Co. are building two 21 inch cylinders for the jetty boat.

Five pairs of engines for the Danks Furnaces are being put in at the Millvale Works, of Graff, Bennett & Co., by Armstrong & Hutchinson. The works of the latter are running full, with a fair prospect of business for the entire year.

The Champion Iron Fence Co. have just issued a large sheet illustration of their new pattern of iron railings. Though established but a few weeks, they are running full. Have just shipped some large lots of railings to Nashville and Memphis.

OHIO.

It has not been two years since the first furnace was built in the new iron region of Perry and Hocking counties. Now there are eleven, built or in course of construction.

Friday, the 6th, a contract was signed by the miners and the Pomeroy Coal Company, by which the former are to get 2 cents per bushel for mining, the contract to run 6 months, and they giving security for the performance of the contract. Several miners who were supposed to be the leaders of the recent strike were not allowed to sign and were given no work. The others went into the mines Monday morning.

The Thomas Furnace, of Gore, is again doing splendidly, making 21 tons of iron per day.

The Shawnee Furnace, of the same place, continues on a fair yield.

The Akron Iron Co. will move their blast furnace and rolling mill to a new site they have purchased in the new iron region, within 12 miles of Gore.

The Bellaire Nail Co. are making large shipments of nails to the Southern and Pacific states.

The Russia Mill, at Niles, is working full; the Niles Iron Company double on the co-operative plan.

[*Continued on page* 11]

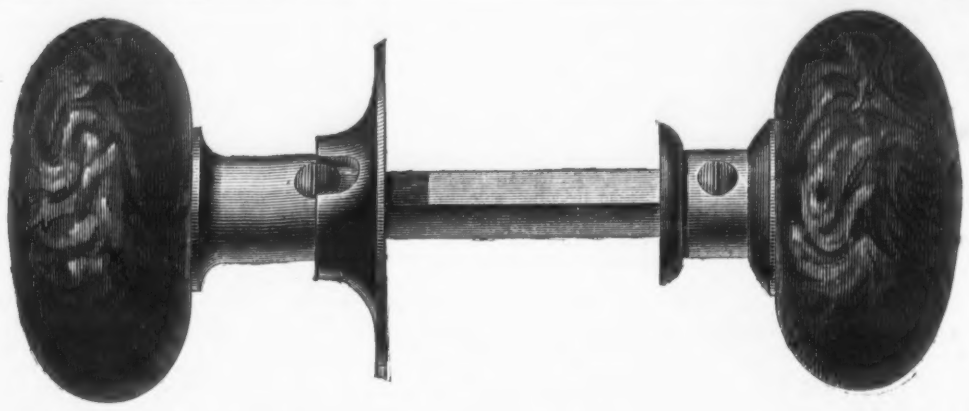
RUSSELL & ERWIN MANUFACTURING COMPANY

Manufacturers of HARDWARE.

FACTORIES, - - - - NEW BRITAIN, CONNECTICUT, U. S. A.

MANUFACTURERS' AGENTS AND DEALERS IN GENERAL HARDWARE AT OUR

WAREHOUSES: NEW YORK, 45 & 47 Chambers St.; PHILADELPHIA, 425 Market St.; SOUTHERN DEPARTMENT, BALTIMORE, MD., WM. H. COLE, Agent, 17 S. Charles St.



Mineral and Porcelain DOOR KNOBS.

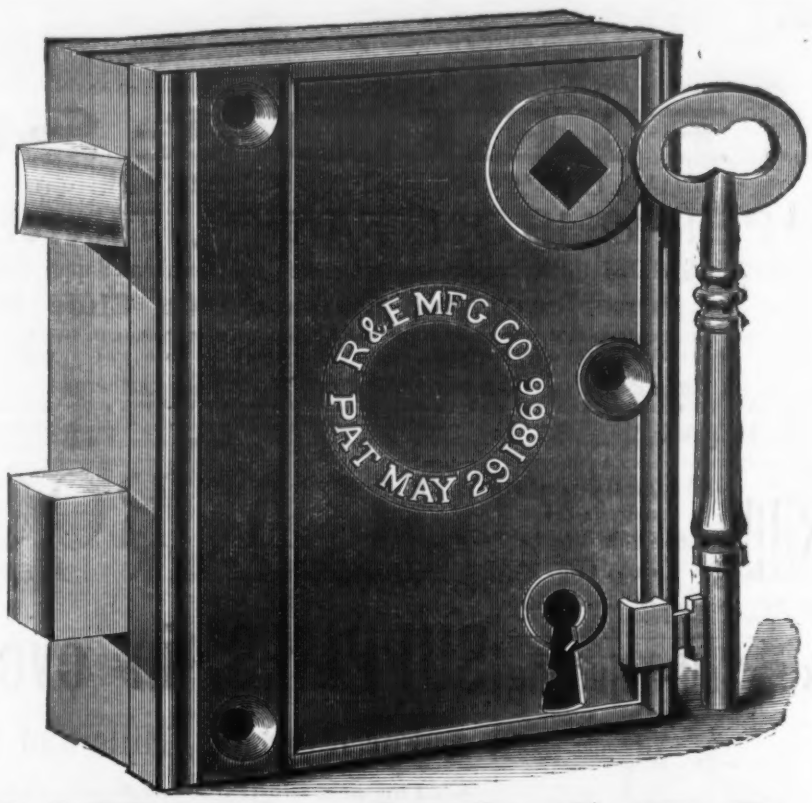
We call **SPECIAL ATTENTION** to the manner in which our **MINERAL** and **PORCELAIN KNOB TOPS** are secured to the shanks. They are and for the last ten years have been **INVARIABLY FASTENED WITH METAL,** and we will cheerfully exchange **TWO PAIRS** of new Knobs for **EVERY SINGLE KNOB** that comes off the shank in use, without the Knob being broken, and will also pay all express charges necessary to effect the exchange.

SCREWS.

We are now producing over **6500** gross per day of **FLAT HEAD GIMLET POINT SCREWS** of **QUALITY** and **FINISH** which we **GUARANTEE** to be **SUPERIOR** to that of any other Screws manufactured in the **WORLD,** and we invite a comparison under the **SEVEREST TESTS.**

Our prices will at all times be as low as those of any standard manufactures, and we solicit letters of inquiry for quotations before orders are given elsewhere.

Our Screws are all packed in our new Patent Paper Boxes bearing our labels, on which are **Large Figures** denoting the **Size** and **Number.**



NEW GOODS.

In consequence of the high prices established for Brass Bolt Rim Knob Locks and Latches, we have determined to place upon the market a new line of **BRASS-PLATED** goods, for which we solicit orders for immediate delivery. We shall increase our variety as occasion may require.

These goods are furnished with **BRASS-PLATED BOLTS** and **SOLID BRASS KEYS,** and in make and finish are equal to our standard goods.

Discounts, same as on our regular goods.

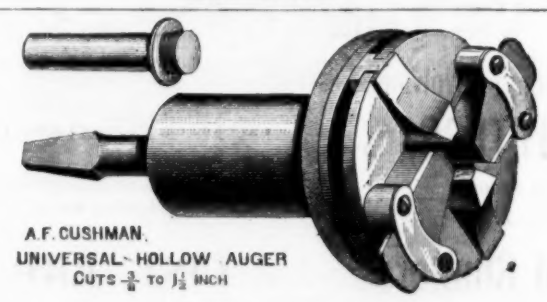
HOME UPRIGHT RIM KNOB LOCKS.

PULL-OUT REVERSE.

No.	Size.		Without Knobs Per Doz.
B 861	4 inch.	Janus face, 2 Brass-plated Bolts, Solid Brass Key, without Stop.	$5·00
B 861½	4 inch.	" " " " " with Stop.	5·25

HORIZONTAL RURAL KNOB LATCHES.

No.	Size.		Without Knobs Per Dozen.
B 557	3½ inch.	Brass-plated Latch Bolt - - - - - - - -	$4·00
B 552	3½ inch.	" " and Slide Bolt - - - - - -	5·00



Sole Agents for

CUSHMAN'S PATENT IMPROVED

Universal Hollow Auger.

The Best and Simplest Auger now in the market.

We have also a full line of

GENERAL HARDWARE,

Which we offer as Manufacturers' Agents, or at Manufacturers' Prices.

[*Continued from page 9.*]

INDUSTRIAL ITEMS.

OHIO.

It is stated that the Akron Iron Company will move their Eva-Lily Furnace to the Straitsville region. If this thing of moving furnaces to this region and erecting new ones there is continued, some one will get bit before long.

The Sheridan Horse Nail Co., of Cleveland, manufacture horse, ox and mule nails from Siemens-Martin steel. Four forging machines are now employed at the works, turning out on an average 80 or 100 pounds each per diem. The finishing machine has a capacity of 400 pounds per day. A new finishing machine, weighing 2050 pounds, perfect in its appointments, has been ordered to replace the one that has been in service, and it will be here in a few days. The firm also calculate about the first of June to engage in the manufacture of hair pins from steel wire made by the Cleveland Rolling Mill Co. They ordered machines constructed in England, and as news of their completion has been received their arrival is expected at an early day.

The gas well at the plate and sheet works of the Cleveland Rolling Mill Co. has been abandoned, for the present at least, as a "bad job." It's depth is 1305 feet.

The blast furnace of the Union Iron Works, Cleveland, has been banked for 14 months. This is the furnace that was once before banked for a number of months and the fire found in her when opened. The works are running about two-thirds full time.

At the works of the plate and sheet department of the Cleveland Rolling Mill Company, in the Eighteenth ward, there are from 350 to 400 men employed at present. The works are running full time, and turn out about 22 tons of plate per day. Every other branch of these mills is also full. The product is larger than at this time last year. The strike did not trouble the plate and sheet men.—*Review.*

The Canal Dover Rolling Mill Company, Canal Dover, capital stock $100,000, in shares of $100, by William Davis and others, has filed certificate of incorporation with the Secretary of State of Ohio.

KENTUCKY.

The nail department of the Norton Iron Works, for the week ending April 7th, cut of all sizes 4501 kegs of nails, which is a very good week's work for the number of machines employed. All departments of the works are running full blast; the forge and rolling mill on double turn. The furnace is working splendidly, making both a good quality and quantity of iron. Shipments for the week ending Saturday the 7th, 1600 kegs of nails.

The Ashland Furnace is working well, as usual; that is, making lots of iron.

ILLINOIS.

The heaters and roll hands of the Springfield Iron Company's Works have been discharged, and non-union men will be employed in their stead.

GEORGIA.

Mr. Asa Weimer, who lately returned from Cartersville, reports that the blast engine of Weimer's make, for the Diamond Furnace of Messrs. Ward & Guerard, has been in successful operation several weeks, and that it has increased the yield of the furnace more than threefold. With the former blast apparatus the daily output was from 5 to 6 kegs of ferro-manganese per day, while with the new high speed engine the daily product is from 18 to 20 kegs.

MICHIGAN.

Within the last thirty days the Eureka Iron Company have shipped nearly 400 tons of pig iron to the Oliver Chilled Plow Manufacturing Company, of South Bend, Indiana. Two orders of 100 tons each have also just been received from the Detroit and Michigan stove works.

Steel Horseshoes.

Mr. John R. Williams, formely president of the Burgess Steel and Iron Works, of Portsmouth, O., and E. V. McCandless, of Pittsburgh, Pa., are about to manufacture a new patent steel horseshoe, the invention of Mr. Williams, which is turned out by machinery all ready for use. A description of the process by which they are made will give the best idea of the shoes and the machinery used. The ends left in the manufacture of steel rails are tri-split. Each portion is then put through a set of roughing rolls and forming rolls, leaving it a diamond shaped bar. It is then run through the calking rolls, and comes out a bar of Williams' patent horseshoe blanks. This is a bar of steel, the usual size of a horseshoe bar, upon the upper surface of which there are first, a broad calk, then two narrow ones, then a broad one, and so on. When this bar is cut at the center of each alternate broad calk, we have the calked horseshoe blank, the two halves of the broad calks cut, being the heel calks, the four narrow calks next to them, the side calks—a novel and very useful feature of this shoe—and then the broad center calk forming the toe calk on the finished shoe. The next step is to take this blank and stamp the creases for the heads of the nails between the calks. This leaves four bulging prominences upon the edge of the shoe next to the crease. These are sawed off by a steel saw, and the shoe is ready to be bent into shape.

To bend the shoes the bar or blank is placed with the toe calk just beneath a die, the exact shape of the inside of the shoe, and the ends are forced around to the upper end of the die by two small rollers sliding in slots. When this is done, while the steel is yet hot, the shoe is placed in a steel die and a heavy steam hammer falls upon it. This presses the shoe into its exact shape, smooths it off, and a very neat device, a small projection in the die, throws up a toe clip. The nail holes are then punched, and the shoe is complete.

Among the advantages of the invention is the fact that the shoes are to be made in 12 sizes, and of each size there will be a narrow and broad sort, so that the horses which cannot be fitted without the blacksmith's changing the original shape of the shoe will be very few. Even heating them will not be a necessity. The calks are all of equal length, and cannot be changed by the smith.

AMERICAN BOLT & NUT WORKS, Cincinnati.

L. M. DAYTON,

MILL, Anchor Iron & Steel Works, Newport, Ky.

CINCINNATI, O.

Bar Iron, Carriage Bolts, Plow Bolts,
Sheet Iron, Tire Bolts, Hot Pressed Nuts,
Horse Shoe Iron, Machine Bolts, Washers.

BRIDGE AND RAILROAD WORK A SPECIALTY.

CLARK BROTHERS & CO.,

SOLE MANUFACTURERS OF

Clark's Patent Concave Carriage Bolt.

Best Bolt manufactured for all kinds of Agricultural Machinery. Will not split the wood, and cannot turn in its place.

ALSO MANUFACTURERS OF

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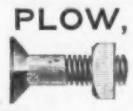

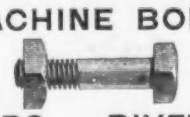

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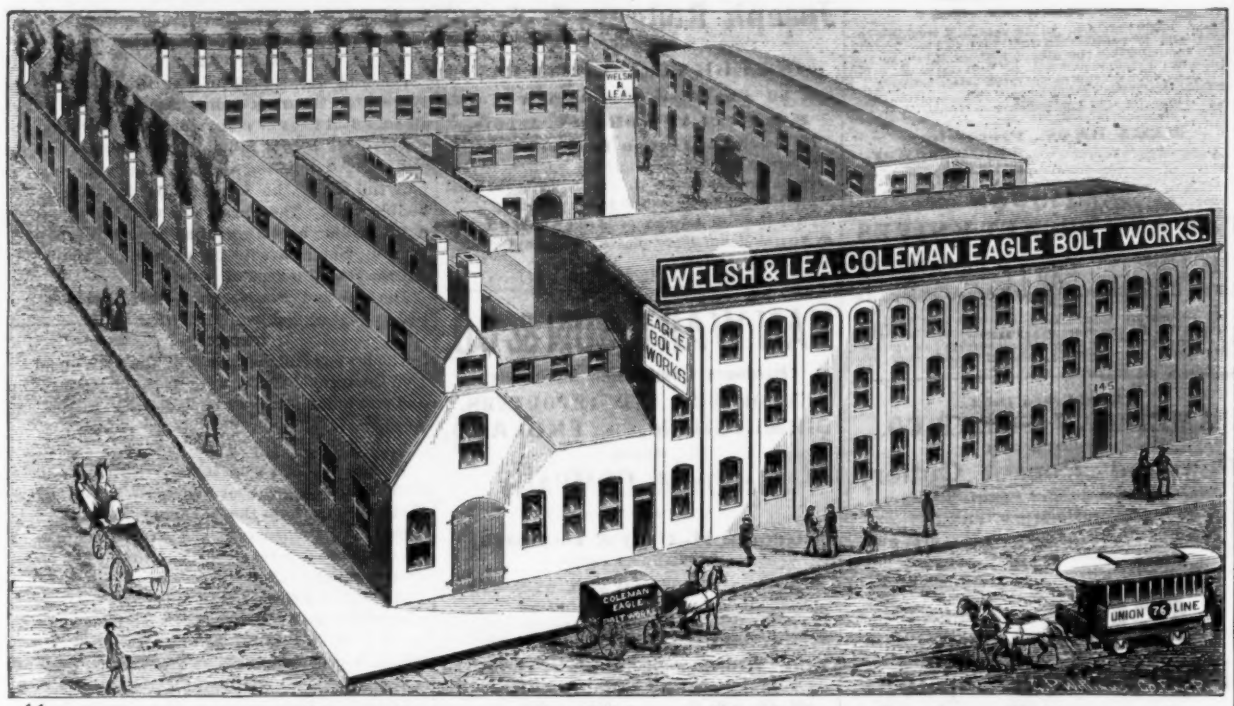
COLEMAN EAGLE BOLT WORKS,

145 Columbia Ave., PHILADELPHIA.



"Norway" Carriage & Tire Bolts, Axle Clips, &c.

C. R. MOON & CO.,

Dealers of

WROUGHT IRON HARDWARE SPECIALTIES FOR WAGONS,

And all kinds of CARRIAGE AND WAGON MALLEABLES.

Also Manufacturers of

MOON'S IMPROVED NECK YOKE.

The Best and Cheapest in the market. Send for Catalogue. Correspondence solicited.

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Iron, Steel, Nails,

HEAVY HARDWARE, WAGON AND CARRIAGE MATERIAL, DRILLS, ANVILS, BELLOWS, VISES, CHAINS, &c.

CHICAGO ILLS.

TOWER'S PATENT

Double Shovel Plow.

Combines more good points than any other; adjustable handles; depth perfectly regulated from end of beam; adjustable foot; shares can be drawn down till worn out; a perfect **BREAK PIN,** by substituting wood pins for either at the foot bolts.

Write for prices and discounts. Freight equalized to all important places.

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FRANKLIN S. MILES, Manufacturer of

Brass, Iron, Steel and German Silver SCREWS.

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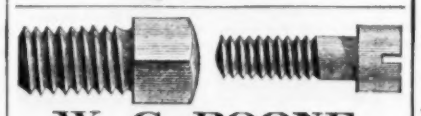

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26, 28 and 30 Humboldt St., cor. Debevoise, Brooklyn, E. D., N. Y. Manufacturer of Standard

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Case-Hardened Set, Cap and Gibb **Screws,** Hexagon, Collar, and Drilled Head Screws, Agraffes and Nose **Bolts, Special Screws, Rivets, &c.,** made to order of Iron, Steel or Brass. Also Brass Knobs of all kinds made to order. Our Screws are made of the Best Low Moor or Norway Iron, and are uniform in size.

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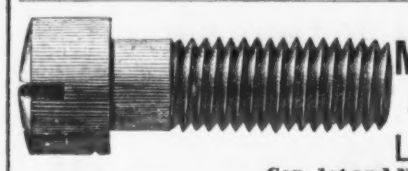
BRIDGE & SHIP RIVETS.



TURNED MACHINE SCREWS,

One-sixteenth to five-eighths diameter. Heads and points to sample.

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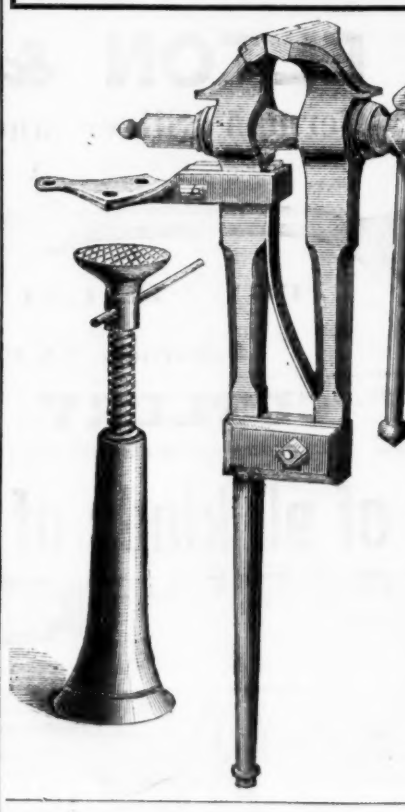
All dealers in **SPRINGS AND AXLES** will find it to their interest to send to us for Price List and Discounts. WOOD, SMITH & CO., Fort Plain, N. Y.



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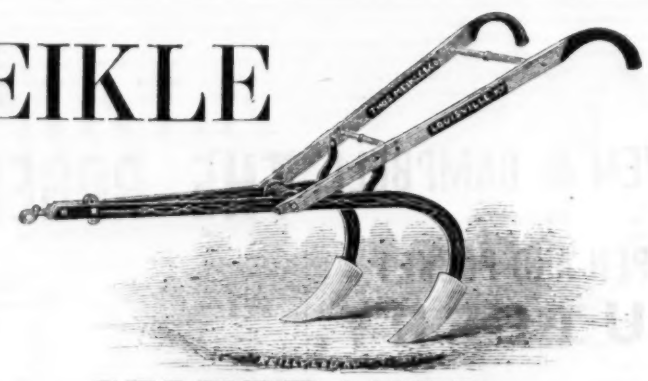
Composition and Steel Roller Bushings, Fishing Swivels, Coffee Mills, Jack Screws, Turning Lathes, Clamp Heads and Screws,

Parallel Bench Vises, Vise Screws, Box Chisels, Rivets, Sheaves, Block Pins, Riggers' Screws, Calkers' Tools, Tackle Blocks and

GENERAL HARDWARE.

OFFICE & WORKS, New London, Conn.

MEIKLE



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IRON BEAM DOUBLE SHOVEL PLOW.

Send for Circular. THOS. MEIKLE & CO., Louisville, Ky.

The Iron Age.

New York, Thursday, April 19, 1877.

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JOHN S. KING - - *Business Manager.*

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THOS. HOBSON, Manager.

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The publishers of *The Ironmonger*, 44a Cannon Street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

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The American Hardware Company are our agents for Australia. They will exhibit files of *The Iron Age* in the American Building of the International Exhibition, at Sidney, N. S. W., where subscriptions will be received. After the close of the Exhibition, the files may be examined at, and orders for subscription directed to, their office in Melbourne. Sample copies will be mailed by them, free of charge, to any firm engaged in the trades we represent in Australia, Tasmania and New Zealand.

City subscribers will confer a favor upon the Publisher by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

REMOVAL.

The office of THE IRON AGE *will be removed May 1st, 1877, to No. 83 Reade street, southeast corner of Church street.*

CONTENTS.

Condition of Blast Furnaces of the United States, April 1, 1877.

We give in another column our quarterly statement of the condition of the blast furnaces of the United States, showing the furnaces in and out of blast April 1, 1877. In compiling this table we have been, as heretofore, assisted by a large number of correspondents, and we wish to especially thank those who have not only filled out our blanks, but have added much valuable information.

To avoid any possible misunderstandings, we again make the following explanations as to the tables:

1st. The divisions of localities are geographical for the most part, and are not made with reference to the points from which furnace supplies are drawn. 2d. The columns "in blast" and "out of blast" only show the stacks from which we have reports, and their footings will not equal the footings of the column of total number. 3d. We have included some furnaces that are rebuilding and not yet completed, and in one or two cases some furnaces that have been reported abandoned, since their owners do not so report them. In other cases we have stricken from our list furnaces that are generally included in such lists, as we are assured they are permanently out. 4th. The column of capacity per week is much in excess of what the regular working of the furnaces will show—stoppages, slow working and various other causes which will readily occur to those interested, combining to reduce the make below the furnace capacity.

The condensed report, as compared with our last report made for Jan. 1, 1877, is as follows:

	In blast, April 1, 1877.	In blast, Jan. 1, 1877.	Out of blast, April 1, 1877.	Out of blast, Jan. 1, 1877.
Charcoal	57	73	230	209
Anthracite	82	87	142	136
Bituminous	79	84	196	123

As will be seen, in every case the number of furnaces in blast has been reduced. This reduction in the case of charcoal furnaces is mainly in the South; of anthracite, in the Susquehanna Valley, and of bituminous in the Shenango Valley, though in no case has the reduction been considerable. During the next two or three months many charcoal furnaces will blow in. What the prospect for the anthracite furnaces is we cannot say, but not many bituminous furnaces can blow until the opening of lake navigation will bring down ore.

Stove Repairs.

Ever since stove founding became a great national industry, the manufacture and sale of repairs has been a very important and profitable branch of the business. For some years past the prices charged for odd plates have borne no very close relation to their cost, nor to the price charged for an equal weight of metal in new stoves. The cost of molding, weight of iron, trouble of shipping and loss of interest involved in carrying stocks of repairs to meet the occasional and uncertain demands of consumers, have all been taken into account, and to them the manufacturer has added a liberal profit, which was warranted by the fact that he had a monopoly of the business, and that the economy of repairing stoves partially worn out and thus continuing them in use, was so great that the price charged for them would not, within reasonable limitations, check the consumptive demand. Under these conditions repairs have always borne a high price, and as a thing is always worth, commercially, what it will bring, we do not see that the manufacturers are in any respect to blame for having made their repair business pay them a liberal profit.

It is one of the inevitable drawbacks to the enjoyment of even moderate profits, however, that they induce others to go into the business until, in the resulting competition, prices are so reduced that there no longer remains a profit for anyone. This has been the case with stove repairs. Any founder could file up a casting of a grate or a fire pot and use it as a pattern—the shrinkage not being great enough to make much difference to the consumer; and so many founders have done this, on their own account and for dealers, that the manufacturers have experienced a very serious falling off in the amount of their orders. In addition to this, the general founders who have gone into the stove repair business have put down their prices to 4 and 4½ cents per pound, and some have gone so far as to manufacture large and extensive stocks which are offered to dealers at prices below what the manufacturers can afford to sell them at without loss. The manufacturers have tried to stop the use of their castings as patterns, but without much success, and some of the more enterprising manufacturers have met the competition by reducing their prices so low that there is no longer any profit for manufacturers or outside founders in stove repairs. This movement has given rise to a great deal of discussion in the trade, and as the subject has interest for a very large number of our readers, an expression of our views on the subject may not be out of place in these columns. Our conclusions, reached after a somewhat careful examination of the subject in all its aspects, are, briefly, as follows:

1st. The differences of opinion which exist between the manufacturers and the dealers are to some extent irreconcilable. The former consider that repairs are goods which should stand a large profit, as the average cost of the pieces called for is somewhat greater than appears in the expense of molding or the weight of the iron poured. The dealers, on the other hand, consider that the lion's share of the profits on repairs belongs to them, and that, as they are often compelled to satisfy the consumer by charging reasonable prices, they should have repairs cheaper than the manufacturers feel able to supply them. Here is a serious difficulty at the outset.

2d. The manufacturer considers that, as he makes the goods which need repairing, he has a natural and proper monopoly of the business of supplying repairs. The "pirate" denies that he has any legal rights in the matter (in which assumption he is not much mistaken) and no moral rights which other founders are bound to respect. The dealer is in the position of the donkey between the two hay stacks, but is not so stupid as that historic animal, and has no idea of starving to death while he is making up his mind which to choose. With either accessible, he will choose the one which best suits his convenience. If he can satisfy the demands of his customers with grates, fire pots and other cheap castings bought from a "pirate" near at hand for 4 or 4½ cents per pound, he is not likely to send to a distant manufacturer to get practically the same goods for twice the price, plus express charges. He could only afford to do this were all his competitors to join him in an agreement not to buy except of the manufacturers. What he can get at half price near home, he will take; what he cannot thus obtain he will order from the manufacturers, and pay whatever price is demanded. No one but the manufacturer will deny that he follows the wisest, and, indeed, the only course open to him by which he can do business profitably. Here we have another difference of opinion not easily reconciled as matters now stand.

3d. It is just as well to leave high moral considerations out of the question altogether. The manufacture and sale of an article not patented is a perfectly legal business transaction, and no law could be enacted to prevent it which would not work great injustice to all classes of consumers. The right of a founder to cast grates for a patented stove, when such grates are not patented, seems to us precisely the same as the right of a blacksmith to forge a lot of teeth to replace broken ones in the patent harrows of his customers. We fail to see how it would be possible to draw the line between these two cases in a general law for the protection of manufacturers.

4th. This being the case, the manufacturers must either accept the competition as it exists, or meet and crush it by selling at so small a profit that there is no encouragement for anyone else to make repairs for their goods. In our judgment, it is absurd for the stove founder to plead that he is at a disadvantage in this competition because the "pirate" has no expense for patterns. The cost of wood patterns for the pieces which a "pirate" can afford to make, is an item so small that the manufacturer who takes it into account as a disadvantage in meeting outside competition, must look at things through strong spectacles. But, however this may be, the manufacturer has no choice. The "pirate" snaps his fingers at the charge of dishonesty, and smiles at the threat of an appeal to Congress for an amendment to the patent or trade-mark law which shall meet his case. Nothing would suit him better than for the manufacturers to keep up their prices until they could succeed in getting such a law passed. The only thing he fears is a reduction in prices which will cut down his profits and draw away his trade. The "pirate" is not a philanthropist. He does not do business because he loves his fellowmen, but for profit. When he can no longer make a profit he will stop making stove repairs and go at something else.

5th. It might as well be conceded now as later that the day of high prices and large profits on repairs is gone for everybody in the trade. This may be a very melancholy fact, but whether it is or not we must admit it. Perhaps the ultimate result will be to induce manufacturers to give more attention to the designing and casting of stoves, with a view to strengthening and rendering more durable the parts which soonest give out. We should like to see the experiment tried, and are satisfied that the resulting benefits to the trade would be much greater than are commonly supposed.

6th. We think the time has come when the sale of repairs by the pound can be abandoned with advantage. The maker of a stove knows perfectly well which parts likely to need renewal can be made by the "pirates," and which cannot or will not. Why, then, can he not establish a sliding scale of prices for the repairs for every stove he makes—fixing the price on the rough castings so low that no one can make them profitably in competition with him, and charging a fair price for those pieces of which his possession of patterns made from the wood gives him a natural monopoly. If he adopts this system, why not send to his customers a schedule of repairs for every stove they buy of him, so that the dealer, by adding the cost of carriage, may know exactly what he must charge the consumer to make a fair profit for handling the goods? Pretending to charge for repairs by the pound is a farce at best, and serves no other purpose than to make the consumer, who knows the price of ordinary castings, think he is swindled.

Finally, we think repairs have always carried too large a share of the profits of stove founding and that the consumer should be considered in fixing the prices charged for them. He does not buy a stove for the purpose of giving the manufacturer an opportunity to tax him from year to year on necessary repairs. A man who feels that his stove has been an unprofitable possession will never buy another of the same kind, nor probably of the same make. Reasonable prices and promptness in filling orders for repairs, are courtesies to the consumer which will pay in the long run.

We might extend these very general remarks to an indefinite length, did time and space permit, but probably we have touched all the points of immediate importance which have been brought out in the discussion. Perhaps we shall find something to say to the dealers at another time.

The Paris Exposition of 1878.

Nothing could have been more welcome to American manufacturers, nor more conducive to their interests, than the second International Exhibition at Paris, to come off next year. The motives that have led the French to select a time so close upon our own Exhibition, despite the many protests against the frequency of these great shows, are manifold, but they all reflect credit upon their political sagacity and patriotism.

France, since the closing catastrophe of the second empire, has developed energies which have won admiration from her worst enemies. If she has for the time being ceased to be the political arbiter of the continent, her marvelous elasticity under reverses that would have laid prostrate for a generation any other nation, has manifested itself with such vigor and brilliancy that the desire of her people to demonstrate her vitality at a great peaceful tournament after a short interval of seven years of peaceful recuperation, seems both natural and praiseworthy. No fitter place could have been chosen than the French capital, for centuries past the center of art and refinement in Europe. Paris is, beside, a great commercial and financial focus, only next in importance to London. From there the large export trade of France in manufactured articles principally radiates. The facilities and cheapness of travel, and the thousand attractions which the gay metropolis offers, will cause an accumulation of visitors much greater probably than came to our Centennial or to the Vienna Exhibition, provided always that Europe does not become involved in a general war in the meantime; this, however, is not likely.

The nearness of the Paris Exhibition enables our manufacturers to appear there with the laurels they have gathered at Philadelphia still fresh. Mr. A. Lutton, agent of the French Commission at the Centennial, in a recent letter to the *Courrier des Etats-Unis*, of this city, expresses himself as follows:

I feel convinced that the Americans will not need to be stimulated to accept the invitation of France to appear at Paris. The political agitation may have prevented the Executive from responding sooner to this invitation, but all who, like myself, know the sentiments of a large number of American manufacturers, have no doubt as to an extensive representation on their part. American industry has developed so powerfully since the war that its manufacturing plant and capacity are greatly in excess of local requirements. They, consequently, imperatively need an outlet for surplus production. But while the Americans prepare for our Exposition, they should bear in mind that there is a vast difference between doing a thing well and doing it quickly.

In order to do the thing well all crowding should be avoided; the quantity adds nothing to the quality of the product to be exhibited, consequently the forwarding to Paris of immense blocks of chemical and pharmaceutical preparations should be avoided. In handsome little vases they will be seen to as much advantage. The Americans, who are accustomed to doing things expeditiously, are easily tempted to delay action to the last moment, and the goods arriving too late may not have the full benefit of close examination by the judges.

The *Courrier* adds: "The delay caused "by the political agitation has only demon- "strated the more the pressing necessity "which there is of going to work at once, "and making up for time lost. American "manufacturers are multiplying their ef- "forts, and we know full well that every- "thing will be arranged. Everybody is "favorably disposed at Washington; what "can be done, will be done, and in a man- "ner to satisfy all interests. But definitive measures will be kept in abeyance "till the extra session of Congress in June "next. Then the course to be adopted "will be planned, the proper persons fixed "upon, and nothing will be required but "to put the machinery in motion."

Every consideration of sympathy for our oldest and truest ally, as well as of interest, prompts us to appear at Paris with dignity and emphasis such as becomes the only rival of Europe in the industrial arena. At Paris there will be assembled multitudes of consumers who have but an imperfect idea of what we produce, for in 1867 we were but scantily represented there. The same was true at Vienna in 1873, and the fame of our manufactures will cause the American exhibits at Paris to be examined with critical attention.

If we are determined to dispute with European manufacturers the possession of the world's markets, exhibitions like the coming one afford us the best opportunity for showing what we have accomplished, and the money and time expended will prove a good investment. The foothold which certain of our manufactures—leather, for instance—have gained in Europe, sufficiently proves that our ability to compete with Europeans in Europe is in some branches even greater than we had any idea of. We are now rapidly securing an important outlet for plain cotton fabrics and prints even in England, the mere thought of which would have been scoffed at two years ago. No markets in the world can be more desirable to us than those of Western Europe, in our dealings with which we are always sure of quick returns on the safest possible basis. The profits, it is true, are small, but a capital by the aid of steam and the cable may be turned over and over again in a single twelvemonth, while the capacity of absorption of staple articles in Europe is unlimited.

The Permanent Exhibition.

Notwithstanding the decision of the United States Supreme Court requiring the return to the Treasury of the million and a half dollars appropriated in aid of the Centennial Exhibition, which has somewhat crippled the undertaking, it is said that the Permanent Exhibition to be opened on the 10th of May prox. will be a success. All the space available in the main building is reported to be taken, and the exhibits will represent something of every class shown in the Centennial Exhibition. Boilers and engines are being put into the west wing, which will be devoted to machinery. In many respects it will be a very satisfactory substitute for the Centennial, and will, no doubt, attract a great many visitors. Agricultural Hall is about the only important building which will not be kept standing, and the appearance of the grounds is much the same as it was last year. The only feature of the scheme which we cannot commend is the effort which will be made during the extra session of Congress to secure the reappropriation of the $1,500,000 in aid of the enterprise. We fail to see any good reason why the national government should assume any part of the cost, or how it can do so without establishing a dangerous precedent. The plea advanced for aid in behalf of the Centennial was warranted by the fact that this had been made a national enterprise, and the government had assumed control of its management. Its failure in any degree would have entailed national mortification and disgrace and humiliated the American people in the eyes of the world. This can scarcely be said of the Permanent Exhibition. We hope, for many reasons, that it will succeed and become a permanent institution, but we should think the enterprise of the public-spirited citizens of Philadelphia great enough to carry on the work without either loan or appropriation from the national Treasury.

In another column we present the third of a series of papers by Mr. Edmund C. Pechin, on "Furnace Capacity and the Outlook for the Iron Trade." The interest of these papers should command for them wide attention. Mr. Pechin is not a voluminous contributor to current literature,

but what he writes is always of value, and in this instance his views on matters of importance as affecting the future of our iron industries, derive additional interest from the fact that they are given over his name.

Prison Labor in Stove Founding.

The policy of two of the largest stove manufacturing houses of Albany, in contracting for convict labor in the Sing Sing, N. Y., and Columbus, Ohio, prisons, has given rise to a great deal of vigorous and not altogether good-natured discussion, in and out of the trade. The idea prevails, especially among mechanics, that convicts either should not be permitted to work, or that the product of their labor should not be permitted to compete with the product of the labor of honest men in the mechanical trades. They hold such competition to be unjust and pernicious in its influence, and claim that the honest mechanic has no chance of competing successfully with the convict, or his employer with the prison contractor. Various attempts have been made to secure the passage of legislative enactments forbidding any further contracting for prison labor, and it is probable that such efforts will now be resumed, with additional support derived from the stove trade.

It is as easy to take a superficial view of this as of any other question. The fact that prison labor can be contracted for at rates varying from one-quarter to one-half those paid outside the pisons, seems to give the prison contractor a great advantage. The fact remains, however, that very few contractors have succeeded, and that prison labor in some states has gone begging for years. We know of one instance in which a firm of heavy contractors, shoe manufacturers, failed, and the state took their machinery, stock, &c., in satisfaction of its claims. The use of this machinery, the uncut stock, lasts, tools, unfinished work, &c., and as much labor as might be wanted, were all offered free for some months—the remainder of a year—to anyone who would make a contract from the 1st of January following, but no one would take it. Most of the contractors who have made money on the product of prison labor, have lost it again because of prison labor; and while success is possible on this basis, we do not think the encouragement great enough to induce manufacturers to abandon free labor under any but exceptional conditions.

There are many disadvantages which fairly offset the advantage of cheapness in prison labor. The convicts have to be taught trades for which they may have no natural adaptation, and they discharge their tasks in a perfunctory way, satisfied if they escape punishment for obvious indolence or carelessness, but indifferent whether they satisfy the contractor or not. His interests are nothing to them, and whether he makes money or loses it is no concern of theirs. Again, the contractor's success depends largely upon causes beyond his control. A change in the management of the prison may wholly change the system of discipline, and make it impossible for him to get his work done satisfactorily or properly. How important a factor is discipline is shown by the fact that the contract price of prison labor depends upon it almost wholly. In one of our large New York prisons it is 40 cents per day; in another, 80 cents; at the Columbus State prison it is held to be worth $1·10, we believe; in the Massachusetts prisons it is worth an average of 60 cents. Thus we see there is no fixed standard by which to measure the market value of a convict's labor, and, as we have said, it may appreciate or depreciate from causes wholly beyond the control of the contractor. This is an element of uncertainty which is often great enough to defeat the best laid plains of contracting manufacturers, and to render large investments in machinery, &c, hopelessly unprofitable. There is, on the other hand, a possibility that labor contracted for at 40 or 50 cents per day may, under a better system of prison management, become worth a dollar or even more; but the element of uncertainty is much greater in the prisons than outside. Even when all other things are favorable, the fact that a majority of prisoners are short term convicts, and are likely to be discharged, pardoned, drafted to other prisons or detailed for other duties before they have done enough good work to pay the cost of teaching them their trades, is a serious drawback. None of these obstacles are insurmountable, of course, but they are sufficiently serious to offset much of the advantage of cheapness. The Albany firms about to make the venture are financially strong and conspicuously enterprising. If any two houses can utilize convict labor profitably they are the two which have ventured the experiment. The members of the Molders' Union have themselves to thank for bringing about a change which they regard with so much alarm. That the Union will be broken is now evident, but we are not yet sure that those who run with non-union labor will not drive a good share of the advantage to the trade resulting from the bold policy of the two firms which have lately made the large prison contracts above alluded to.

Condition of the Blast Furnaces of the United States, April 1, 1877.

(Compiled for The Iron Age.)

Location.	CHARCOAL.					ANTHRACITE.					BITUMINOUS OR COKE.				
	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.
New England	18	6	410	12	766	1	.....	.....	1	130	.....	.....	.....	.....	.....
New York	17	5	330	12	892	42	18	3,850	24	5,480	.....	.....	.....	.....	.....
New Jersey	.....	.....	.....	.....	.....	16	5	1,160	11	2,300	.....	.....	.....	.....	.....
Pennsylvania	40	9	464	31	1 336	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lehigh Valley	.....	.....	.....	.....	.....	50	22	6,900	28	5,500	.....	.....	.....	.....	.....
Schuylkill Valley	.....	.....	.....	.....	.....	50	16	2,875	34	4,610	.....	.....	.....	.....	.....
Upper Susquehanna Valley	.....	.....	.....	.....	.....	25	6	1,050	19	2,980	.....	.....	.....	.....	.....
Lower Susquehanna Valley	.....	.....	.....	.....	.....	36	14	2,255	22	3,065	.....	.....	.....	.....	.....
Pittsburgh	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	5	2,150	6	2,375
Allegheny Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	3	2,330	7	2,675
Shenango Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	9	1,840	22	4,560
Yough'eny Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	3	1,125	2	300
Juniata and Conemaugh Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	10	2,025	11	1,475
Maryland	17	5	349	12	590	3	1	150	2	300	4	.....	.....	4	455
Virginia	27	3	108	24	1,073	1	.....	.....	1	140	5	1	150	4	315
North Carolina	8	1	24	7	250	.....	.....	.....	.....	.....	1	.....	.....	1	(?)
West Virginia	6	1	120	5	413	.....	.....	.....	.....	.....	6	2	580	4	1,100
Ohio	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mahoning Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	9	2,450	12	2,680
Eastern, Central and Northern	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	19	4,295	9	2,180
Hanging Rock	39	3	280	27	2,350	.....	.....	.....	.....	.....	15	3	1,150	12	1,590
Miscellaneous	3	1	100	2	135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hanging Rock	10	5	450	5	370	.....	.....	.....	.....	.....	2	2	600	.....	.....
Western region and miscellaneous	8	.....	.....	8	566	.....	.....	.....	.....	.....	1	1	300	.....	.....
Tennessee	18	1	100	17	1,218	.....	.....	.....	.....	.....	4	2	420	2	340
Georgia	8	1	110	7	245	.....	.....	.....	.....	.....	3	1	150	2	325
Alabama	12	4	455	8	515	.....	.....	.....	.....	.....	2	1	200	1	200
Indiana	1	1	140	.....	.....	.....	.....	.....	.....	.....	8	2	430	6	940
Illinois	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	3	925	9	3,015
Michigan	30	5	845	25	2,960	.....	.....	.....	.....	.....	4	.....	.....	4	1,050
Wisconsin	12	3	300	9	1,107	.....	.....	.....	.....	.....	3	.....	.....	3	1,000
Minnesota	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Missouri	11	3	555	8	1,160	.....	.....	.....	.....	.....	8	3	925	5	1,645
Texas	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	281	57	5,025	220	17,946	224	82	18,240	142	23,495	205	79	19,875	126	28,220

Furnace Capacity and the Outlook for the Iron Trade.

Third Paper.

To the Editor of The Iron Age—DEAR SIR: Business engagements of a pressing nature have until now prevented the preparation of additional matter.

As you have asked that the further papers of this series shall appear over my own signature, I do not feel at liberty to refuse a request so kindly made.

I beg leave to state that the conclusions reached are the result of patient investigation and careful study. It is not only possible, but highly probable, that others more competent may differ widely in their views and conclusions, and to such I can only say that I am at all times open to correction, and if I err either in facts or conclusions, I shall be most happy to be corrected or convinced, simply asking, if any discussion should arise, that it be conducted with fairness and courtesy, leaving the public to judge as to the merits of the questions involved.

In the article of February 15th, the ground was taken that a readjustment and relocation of the iron business of this country was taking place; that while our present furnace capacity was nominally far beyond our home wants, a very large number of furnaces could not possibly run without a marked increase in the price of pig iron, which was not likely to occur from reasons to be given.

In the paper of March 1st an attempt was made to show why the foreign ironmaster had been enabled to manufacture so cheaply, and what had led to the high cost heretofore in this country, in the face of our wonderful natural advantages. In this and succeeding papers we shall endeavor to ascertain whether iron cannot be made here at a cost low enough to enable us to sell at a profit in other than our own markets, as we are thoroughly convinced that the disposition of our surplus is the vital question upon which much of our future prosperity depends. If this can be shown, it follows that a very large number of furnaces, whose owners frankly admit that they cannot afford to make pig iron at present prices, are not likely to go into blast, and that really our present nominal annual capacity of 4,500,000 tons is practically not much more than half of this, and allowing the usual percentage of furnaces out, for repairs and alteration, it is more than probable that with a speedy revival of business the demand could not be supplied with cheap iron. With this increased demand, therefore, would come an advance, leading idle furnaces to "blow in," only to drag out a precarious existence until the increasing competition of cheaper irons would again compel them to suspend, with no more satisfactory result, possibly, than new good money gone after the old. We frankly admit that this is not a pleasant picture for the owners of millions invested in unprofitable iron works, but it is just what the world has had to face in some way or other for centuries, and will have to face again as times and methods and wants change.

It is a trite saying that it is a wise man who knows how to cut short his losses, and if we are not wholly mistaken the time is at hand for a display of this sort of wisdom, as we think that we can show before we conclude these papers, that during the last two years movements of no inconsiderable magnitude have been going on, tending toward the production of cheaper irons, and which before long will exercise a marked influence upon the whole iron trade of the country.

In our judgment, the profits in the future are mainly to be found in small savings in in the varied operations of manufacture. The materials employed are bulky, and enormous in quantity, demanding either mechanical or animal power to move them, and even under the most favorable circumstances requring repeated handlings. The saving of five cents a ton on each turn amounts to a considerable sum on the finished product.

If we take the statistics for furnace labor alone as prepared by Mr. W. E. S. Baker, and published in various trade journals (see Swank's "American Iron Report, 1876," and *The Iron Age*, April 27, 1876), we can see how large a tax this has been in the past. This high labor has met us in every ramification of the business, from the mining of the raw material to the ultimate product. It has entered into the theories and writings of the political economist and has had a controlling influence in shaping legislation. We fully concede that labor is worthy of that full compensation, which will make it comfortable, respectable and contented, but this only strengthens the point, that we should exercise the closest economy in its use. If our labor consisted of slaves, or serfs, or paupers, its lavish use might be tolerated, but, as has been already stated, that condition only is desirable when both labor and capital are properly remunerated and consequently satisfied.

Pay labor well, but use as little of it as possible. It may be urged that if this practice generally obtained, the curious anomaly might present itself of a portion of labor well paid, and the balance idle. The answer is, that with the vast undeveloped resources of this continent there is room for all, and the adoption of the above policy would tend to create a prosperity, which steadily widening the range and increasing the scope of successful enterprise, would afford employment to all, as inclination and capacity might determine.

It is a sound rule of trade that there must be as little transportation of raw material as practicable. If this holds good generally, it is of prime importance in the manufacture of pig iron, where so large a percentage of the materials employed passes off as waste. It would seem to be the highth of folly to pay freight on slag, yet this has been largely done in the past, is now being done, and, to a certain extent, cannot be avoided in the future; but sound practice requires that this should be confined within the narrowest limits, for it is quite certain that if there are two establishments using practically the same materials and obtaining similar products, other things being equal, the one having its supplies close at hand will, in the long run, drive to the wall the other getting them at a distance.

Any handling of stock that can be avoided saves so much money. Supplies that can be carried at the mines or delivered each day for current wants can manifestly be handled with much greater economy than when large accumulations are required at the furnace to cover seasons of the year when deliveries are interrupted. In the former case a much smaller working capital will manage a given volume of business, and the saving of interest is an item of considerable importance.

The writer has seen in the fall of the year enormous accumulations of ore, coal and limestone to carry on operations until the opening of navigation, requiring large space, a labor charge in stocking, a second and larger charge for wheelage to the furnace when needed for use, and necessarily a compounding interest account of no mean proportions on original cost, freight charges and first handling.

The disadvantages do not end here. Within a few days a large Western furnace has been compelled to "bank up" on a fairly active and profitable market for the iron it makes, because its ore supply had been exhausted, and no more to be had until the opening of navigation. Then again, it is impossible to stock such large quantities under cover, and when the outside piles are reached the stock goes into the furnace saturated with moisture, causing an increased consumption of fuel and oftentimes the bad working of the furnace. This is especially the case if the stock is fine. The writer, over and over again, has seen mud dumped into the tunnel head, and the manager or owner wondering why the furnace "swung off."

The stocking of bituminous and semi-bituminous coals is especially to be deprecated, as it has been proved beyond controversy, both at home and abroad, that a loss of carbon occurs even under shelter, and notably so when exposed; in the latter case the greatest loss occurs within three weeks after mining.

Prof. Langley says: "I have found in "experimenting on our Pittsburgh coals, "that they suffer loss even when kept in "porcelain dishes in the laboratory of the "University, but that if the surrounding air "is perfectly dry, no appreciable loss takes "place at ordinary temperatures; on the "other hand, the air in its ordinary state "contains moisture enough to cause the "slow wasting of the fuel, and if the coal is "kept wet the loss is quite sensible. It is "greater and more rapid in large heaps "than in small."—(*Transactions of Institute of Mining Engineers, Vol.* I, *page* 286).

The loss by abrasion on all classes of fuel is a positive, and with frequent handlings, a serious loss. Each loss, as above enumerated, may be small in itself, but aggregated becomes important as many a balance sheet will show.

Both professional pride and business prudence demand the avoidance of waste, both of power and material, and the engineer or manager who adheres most closely to this rule is the one who comes nearest to the proper discharge of his duty.

Primarily, then, the furnace that has ore, fuel and flux in close proximity occupies a decided vantage ground as far as the mere cost of manufactures is concerned, and at first blush it would seem to indicate that the part of wisdom and profit would be to locate where such conditions obtain.

But here a good many disturbing elements present themselves. Nature does not seem disposed to give all its good things to one man or one place.

The richest and purest ores are found at a distance from fuel. (We are now only dealing with so-called mineral fuel. Charcoal will be considered when we reach charcoal furnaces). When ore is found in close proximity to coal it generally contains impurities which impair its value, requiring the admixture with purer and more expensive ores.

The ores proper of the coal measures (carbonates) are low in iron, and necessarily wrought at increased cost, as they lie in thin seams, embedded in slates, and requiring a large area to be worked over to yield quantity. Oftentimes the coal nearest to good ores is so impure as to prevent its use in smelting operations.

Many exceptionally desirable localities for the cheap manufacture of iron, as we shall hereafter see, are at long distances from the great markets of the country, and the cost of transportation equalizes the higher cost in dearer but more central locations, thus impairing natural advantages, until energy and capital shall in turn make them manufacturing centers. One point also must be kept in mind that within a few years improved processes have tended to neutralize to some extent the past advantages of cerain localities.

It is necessary, therefore, to look over the whole ground with extreme care, and to impartially weigh each point as it presents itself, as the only safe road to proper conclusions. EDMUND C. PECHIN.

A curious fact in connection with the destruction of oil tanks by lightning, has been noticed lately. These tanks are large round iron structures, made of boiler plate or tank iron, as this form of plate iron is called, and holding from 5000 to 20,000 bbls. of crude oil. Some of these have iron tops and others wooden, and the strange feature is that there is no instance known in which an iron top tank has been struck by lightning, while there are scores in which wood roofed tanks have been. The insurance companies are so well convinced of the advantage of iron roofed tanks for protection from lightning that they have agreed to reduce rates of insurance from an average of 5 per cent. to 3 per cent. where all iron roofs are used. The only explanation we can give of this is that the gas which rises from a wooden roofed tank is a good conductor, or that it extends to such a distance about the tank that the danger of explosion by the spark is greatly increased. The iron roofed tank does not allow of so great evaporation.

If all the rumors we hear are true, the hoop iron contract is not the only large one that has been lost to us to give employment to English mills. We hear, from a reliable source, that a large order for plates for California, amounting to some 2000 tons, has been or will be given to English bidders. The pig iron, bar and railroad iron trade of this country may be lost to England; but, as we have several times suggested, in the higher grades of iron the closing battle has not been fought yet. The "mother country" is getting down to "hard pan" as well as we, and when she gets there, and there is any improvement on this side of the water, there will be "blood upon the face of the moon."

Last week the steel rail mill of the Lackawana Iron and Coal Co., at Scranton, Pa., in the usual eleven turns, and running on 50 lb. rails 30 feet long, made the following record:

Total number rails rolled	6,173
Average per turn	561
Total tonnage during week	1,377·18
Average time rolling each bar during entire week, including all stops during and between turns, 77 seconds.	
Best single turn rails	740
Best double turn rails	1,414

Rolling time of above, consecutive, 1414 bars, 23 hours, 43 seconds; average, 60 3·8 seconds per bar; 1414 bars equal 4 miles and 90 feet of track. Greatest speed accomplished, 109 bars in 97 minutes, a little less than 53½ seconds per bar; 6173 rails will lay 17 miles, 2835 feet of track. These figures are not given as at all extraordinary, as the mill could easily add fifteen or twenty per cent. to the total above stated in case of necessity. They are interesting, however, as showing the point to which our average rail mill practice is gradually attaining.

The Avery Plow Works, Louisville, Ky., are turning out 700 plows and cultivators per day. They gave an order recently for 800 tons of steel.

The Iron Age.

New York, Thursday, April 19, 1877.

DAVID WILLIAMS - - *Publisher and Proprietor.*
JAMES C. BAYLES - - *Editor.*
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The publishers of *The Ironmonger*, 44a Cannon Street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

AUSTRALIAN AGENCY.

The American Hardware Company are our agents for Australia. They will exhibit files of *The Iron Age* in the American Building of the International Exhibition, at Sidney, N. S. W., where subscriptions will be received. After the close of the Exhibition, the files may be examined at, and orders for subscription directed to, their office in Melbourne. Sample copies will be mailed by them, free of charge, to any firm engaged in the trades we represent in Australia, Tasmania and New Zealand.

City subscribers will confer a favor upon the Publisher by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

REMOVAL.

The office of THE IRON AGE *will be removed May 1st, 1877, to No. 83 Reade street, southeast corner of Church street.*

CONTENTS.

Condition of Blast Furnaces of the United States, April 1, 1877.

We give in another column our quarterly statement of the condition of the blast furnaces of the United States, showing the furnaces in and out of blast April 1, 1877. In compiling this table we have been, as heretofore, assisted by a large number of correspondents, and we wish to especially thank those who have not only filled out our blanks, but have added much valuable information.

To avoid any possible misunderstandings, we again make the following explanations as to the tables:

1st. The divisions of localities are geographical for the most part, and are not made with reference to the points from which furnace supplies are drawn. 2d. The columns "in blast" and "out of blast" only show the stacks from which we have reports, and their footings will not equal the footings of the column of total number. 3d. We have included some furnaces that are rebuilding and not yet completed, and in one or two cases some furnaces that have been reported abandoned, since their owners do not so report them. In other cases we have stricken from our list furnaces that are generally included in such lists, as we are assured they are permanently out. 4th. The column of capacity per week is much in excess of what the regular working of the furnaces will show—stoppages, slow working and various other causes which will readily occur to those interested, combining to reduce the make below the furnace capacity.

The condensed report, as compared with our last report made for Jan. 1, 1877, is as follows:

	In blast, April 1, 1877.	In blast, Jan. 1, 1877.	Out of blast, April 1, 1877.	Out of blast, Jan. 1, 1877.
Charcoal	57	73	220	209
Anthracite	82	87	142	136
Bituminous	79	84	126	123

As will be seen, in every case the number of furnaces in blast has been reduced. This reduction in the case of charcoal furnaces is mainly in the South; of anthracite, in the Susquehanna Valley, and of bituminous in the Shenango Valley, though in no case has the reduction been considerable. During the next two or three months many charcoal furnaces will blow in. What the prospect for the anthracite furnaces is we cannot say, but not many bituminous furnaces can blow until the opening of lake navigation will bring down ore.

Stove Repairs.

Ever since stove founding became a great national industry, the manufacture and sale of repairs has been a very important and profitable branch of the business. For some years past the prices charged for odd plates have borne no very close relation to their cost, nor to the price charged for an equal weight of metal in new stoves. The cost of molding, weight of iron, trouble of shipping and loss of interest involved in carrying stocks of repairs to meet the occasional and uncertain demands of consumers, have all been taken into account, and to them the manufacturer has added a liberal profit, which was warranted by the fact that he had a monopoly of the business, and that the economy of repairing stoves partially worn out and thus continuing them in use, was so great that the price charged for them would not, within reasonable limitations, check the consumptive demand. Under these conditions repairs have always borne a high price, and as a thing is always worth, commercially, what it will bring, we do not see that the manufacturers are in any respect to blame for having made their repair business pay them a liberal profit.

It is one of the inevitable drawbacks to the enjoyment of even moderate profits, however, that they induce others to go into the business until, in the resulting competition, prices are so reduced that there no longer remains a profit for anyone. This has been the case with stove repairs. Any founder could file up a casting of a grate or a fire pot and use it as a pattern—the shrinkage not being great enough to make much difference to the consumer; and so many founders have done this, on their own account and for dealers, that the manufacturers have experienced a very serious falling off in the amount of their orders. In addition to this, the general founders who have gone into the stove repair business have put down their prices to 4 and 4½ cents per pound, and some have gone so far as to manufacture large and extensive stocks which are offered to dealers at prices below what the manufacturers can afford to sell them at without loss. The manufacturers have tried to stop the use of their castings as patterns, but without much success, and some of the more enterprising manufacturers have met the competition by reducing their prices so low that there is no longer any profit for manufacturers or outside founders in stove repairs. This movement has given rise to a great deal of discussion in the trade, and as the subject has interest for a very large number of our readers, an expression of our views on the subject may not be out of place in these columns. Our conclusions, reached after a somewhat careful examination of the subject in all its aspects, are, briefly, as follows:

1st. The differences of opinion which exist between the manufacturers and the dealers are to some extent irreconcilable. The former consider that repairs are goods which should stand a large profit, as the average cost of the pieces called for is somewhat greater than appears in the expense of molding or the weight of the iron poured. The dealers, on the other hand, consider that the lion's share of the profits on repairs belongs to them, and that, as they are often compelled to satisfy the consumer by charging reasonable prices, they should have repairs cheaper than the manufacturers feel able to supply them. Here is a serious difficulty at the outset.

2d. The manufacturer considers that, as he makes the goods which need repairing, he has a natural and proper monopoly of the business of supplying repairs. The "pirate" denies that he has any legal rights in the matter (in which assumption he is not much mistaken) and no moral rights which other founders are bound to respect. The dealer is in the position of the donkey between the two hay stacks, but is not so stupid as that historic animal, and has no idea of starving to death while he is making up his mind which to choose. With either accessible, he will choose the one which best suits his convenience. If he can satisfy the demands of his customers with grates, fire pots and other cheap castings bought from a "pirate" near at hand for 4 or 4½ cents per pound, he is not likely to send to a distant manufacturer to get practically the same goods for twice the price, plus express charges. He could only afford to do this were all his competitors to join him in an agreement not to buy except of the manufacturers. What he can get at half price near home, he will take; what he cannot thus obtain he will order from the manufacturers, and pay whatever price is demanded. No one but the manufacturer will deny that he follows the wisest, and, indeed, the only course open to him by which he can do business profitably. Here we have another difference of opinion not easily reconciled as matters now stand.

3d. It is just as well to leave high moral considerations out of the question altogether. The manufacture and sale of an article not patented is a perfectly legal business transaction, and no law could be enacted to prevent it which would not work great injustice to all classes of consumers. The right of a founder to cast grates for a patented stove, when such grates are not patented, seems to us precisely the same as the right of a blacksmith to forge a lot of teeth to replace broken ones in the patent harrows of his customers. We fail to see how it would be possible to draw the line between these two cases in a general law for the protection of manufacturers.

4th. This being the case, the manufacturers must either accept the competition as it exists, or meet and crush it by selling at so small a profit that there is no encouragement for anyone else to make repairs for their goods. In our judgment, it is absurd for the stove founder to plead that he is at a disadvantage in this competition because the "pirate" has no expense for patterns. The cost of wood patterns for the pieces which a "pirate" can afford to make, is an item so small that the manufacturer who takes it into account as a disadvantage in meeting outside competition, must look at things through strong spectacles. But, however this may be, the manufacturer has no choice. The "pirate" snaps his fingers at the charge of dishonesty, and smiles at the threat of an appeal to Congress for an amendment to the patent or trade-mark law which shall meet his case. Nothing would suit him better than for the manufacturers to keep up their prices until they could succeed in getting such a law passed. The only thing he fears is a reduction in prices which will cut down his profits and draw away his trade. The "pirate" is not a philanthropist. He does not do business because he loves his fellowmen, but for profit. When he can no longer make a profit he will stop making stove repairs and go at something else.

5th. It might as well be conceded now as later that the day of high prices and large profits on repairs is gone for everybody in the trade. This may be a very melancholy fact, but whether it is or not we must admit it. Perhaps the ultimate result will be to induce manufacturers to give more attention to the designing and casting of stoves, with a view to strengthening and rendering more durable the parts which soonest give out. We should like to see the experiment tried, and are satisfied that the resulting benefits to the trade would be much greater than are commonly supposed.

6th. We think the time has come when the sale of repairs by the pound can be abandoned with advantage. The maker of a stove knows perfectly well which parts likely to need renewal can be made by the "pirates," and which cannot or will not. Why, then, can he not establish a sliding scale of prices for the repairs for every stove he makes—fixing the price on the rough castings so low that no one can make them profitably in competition with him, and charging a fair price for those pieces of which his possession of patterns made from the wood gives him a natural monopoly. If he adopts this system, why not send to his customers a schedule of repairs for every stove they buy of him, so that the dealer, by adding the cost of carriage, may know exactly what he must charge the consumer to make a fair profit for handling the goods? Pretending to charge for repairs by the pound is a farce at best, and serves no other purpose than to make the consumer, who knows the price of ordinary castings, think he is swindled.

Finally, we think repairs have always carried too large a share of the profits of stove founding and that the consumer should be considered in fixing the prices charged for them. He does not buy a stove for the purpose of giving the manufacturer an opportunity to tax him from year to year on necessary repairs. A man who feels that his stove has been an unprofitable possession will never buy another of the same kind, nor probably of the same make. Reasonable prices and promptness in filling orders for repairs, are courtesies to the consumer which will pay in the long run.

We might extend these very general remarks to an indefinite length, did time and space permit, but probably we have touched all the points of immediate importance which have been brought out in the discussion. Perhaps we shall find something to say to the dealers at another time.

The Paris Exposition of 1878.

Nothing could have been more welcome to American manufacturers, nor more conducive to their interests, than the second International Exhibition at Paris, to come off next year. The motives that have led the French to select a time so close upon our own Exhibition, despite the many protests against the frequency of these great shows, are manifold, but they all reflect credit upon their political sagacity and patriotism.

France, since the closing catastrophe of the second empire, has developed energies which have won admiration from her worst enemies. If she has for the time being ceased to be the political arbiter of the continent, her marvelous elasticity under reverses that would have laid prostrate for a generation any other nation, has manifested itself with such vigor and brilliancy that the desire of her people to demonstrate her vitality at a great peaceful tournament after a short interval of seven years of peaceful recuperation, seems both natural and praiseworthy. No fitter place could have been chosen than the French capital, for centuries past the center of art and refinement in Europe. Paris is, beside, a great commercial and financial focus, only next in importance to London. From there the large export trade of France in manufactured articles principally radiates. The facilities and cheapness of travel, and the thousand attractions which the gay metropolis offers, will cause an accumulation of visitors much greater probably than came to our Centennial or to the Vienna Exhibition, provided always that Europe does not become involved in a general war in the meantime; this, however, is not likely.

The nearness of the Paris Exhibition enables our manufacturers to appear there with the laurels they have gathered at Philadelphia still fresh. Mr. A. Lutton, agent of the French Commission at the Centennial, in a recent letter to the *Courrier des Etats-Unis*, of this city, expresses himself as follows:

I feel convinced that the Americans will not need to be stimulated to accept the invitation of France to appear at Paris. The political agitation may have prevented the Executive from responding sooner to this invitation, but all who, like myself, know the sentiments of a large number of American manufacturers, have no doubt as to an extensive representation on their part. American industry has developed so powerfully since the war that its manufacturing plant and capacity are greatly in excess of local requirements. They, consequently, imperatively need an outlet for surplus production. But while the Americans prepare for our Exposition, they should bear in mind that there is a vast difference between doing a thing well and doing it quickly.

In order to do the thing well all crowding should be avoided; the quantity adds nothing to the quality of the product to be exhibited, consequently the forwarding to Paris of immense blocks of chemical and pharmaceutical preparations should be avoided. In handsome little vases they will be seen to as much advantage. The Americans, who are accustomed to doing things expeditiously, are easily tempted to delay action to the last moment, and the goods arriving too late may not have the full benefit of close examination by the judges.

The *Courrier* adds: "The delay caused "by the political agitation has only demon- "strated the more the pressing necessity "which there is of going to work at once, "and making up for time lost. American "manufacturers are multiplying their ef- "forts, and we know full well that every- "thing will be arranged. Everybody is "favorably disposed at Washington; what "can be done, will be done, and in a man- "ner to satisfy all interests. But defini- "tive measures will be kept in abeyance "till the extra session of Congress in June "next. Then the course to be adopted "will be planned, the proper persons fixed "upon, and nothing will be required but "to put the machinery in motion."

Every consideration of sympathy for our oldest and truest ally, as well as of interest, prompts us to appear at Paris with dignity and emphasis such as becomes the only rival of Europe in the industrial arena. At Paris there will be assembled multitudes of consumers who have but an imperfect idea of what we produce, for in 1867 we were but scantily represented there. The same was true at Vienna in 1873, and the fame of our manufactures will cause the American exhibits at Paris to be examined with critical attention.

If we are determined to dispute with European manufacturers the possession of the world's markets, exhibitions like the coming one afford us the best opportunity for showing what we have accomplished, and the money and time expended will prove a good investment. The foothold which certain of our manufactures—leather, for instance—have gained in Europe, sufficiently proves that our ability to compete with Europeans in Europe is in some branches even greater than we had any idea of. We are now rapidly securing an important outlet for plain cotton fabrics and prints even in England, the mere thought of which would have been scoffed at two years ago. No markets in the world can be more desirable to us than those of Western Europe, in our dealings with which we are always sure of quick returns on the safest possible basis. The profits, it is true, are small, but a capital by the aid of steam and the cable may be turned over and over again in a single twelvemonth, while the capacity of absorption of staple articles in Europe is unlimited.

The Permanent Exhibition.

Notwithstanding the decision of the United States Supreme Court requiring the return to the Treasury of the million and a half dollars appropriated in aid of the Centennial Exhibition, which has somewhat crippled the undertaking, it is said that the Permanent Exhibition to be opened on the 10th of May prox. will be a success. All the space available in the main building is reported to be taken, and the exhibits will represent something of every class shown in the Centennial Exhibition. Boilers and engines are being put into the west wing, which will be devoted to machinery. In many respects it will be a very satisfactory substitute for the Centennial, and will, no doubt, attract a great many visitors. Agricultural Hall is about the only important building which will not be kept standing, and the appearance of the grounds is much the same as it was last year. The only feature of the scheme which we cannot commend is the effort which will be made during the extra session of Congress to secure the reappropriation of the $1,500,000 in aid of the enterprise. We fail to see any good reason why the national government should assume any part of the cost, or how it can do so without establishing a dangerous precedent. The plea advanced for aid in behalf of the Centennial was warranted by the fact that this had been made a national enterprise, and the government had assumed control of its management. Its failure in any degree would have entailed national mortification and disgrace and humiliated the American people in the eyes of the world. This can scarcely be said of the Permanent Exhibition. We hope, for many reasons, that it will succeed and become a permanent institution, but we should think the enterprise of the public-spirited citizens of Philadelphia great enough to carry on the work without either loan or appropriation from the national Treasury.

In another column we present the third of a series of papers by Mr. Edmund C. Pechin, on "Furnace Capacity and the Outlook for the Iron Trade." The interest of these papers should command for them wide attention. Mr. Pechin is not a voluminous contributor to current literature,

but what he writes is always of value, and in this instance his views on matters of importance as affecting the future of our iron industries, derive additional interest from the fact that they are given over his name.

Prison Labor in Stove Founding.

The policy of two of the largest stove manufacturing houses of Albany, in contracting for convict labor in the Sing Sing, N. Y., and Columbus, Ohio, prisons, has given rise to a great deal of vigorous and not altogether good-natured discussion, in and out of the trade. The idea prevails, especially among mechanics, that convicts either should not be permitted to work, or that the product of their labor should not be permitted to compete with the product of the labor of honest men in the mechanical trades. They hold such competition to be unjust and pernicious in its influence, and claim that the honest mechanic has no chance of competing successfully with the convict, or his employer with the prison contractor. Various attempts have been made to secure the passage of legislative enactments forbidding any further contracting for prison labor, and it is probable that such efforts will now be resumed, with additional support derived from the stove trade.

It is as easy to take a superficial view of this as of any other question. The fact that prison labor can be contracted for at rates varying from one-quarter to one-half those paid outside the pisons, seems to give the prison contractor a great advantage. The fact remains, however, that very few contractors have succeeded, and that prison labor in some states has gone begging for years. We know of one instance in which a firm of heavy contractors, shoe manufacturers, failed, and the state took their machinery, stock, &c., in satisfaction of its claims. The use of this machinery, the uncut stock, lasts, tools, unfinished work, &c., and as much labor as might be wanted, were all offered free for some months—the remainder of a year—to anyone who would make a contract from the 1st of January following, but no one would take it. Most of the contractors who have made money on the product of prison labor, have lost it again because of prison labor; and while success is possible on this basis, we do not think the encouragement great enough to induce manufacturers to abandon free labor under any but exceptional conditions.

There are many disadvantages which fairly offset the advantage of cheapness in prison labor. The convicts have to be taught trades for which they may have no natural adaptation, and they discharge their tasks in a perfunctory way, satisfied if they escape punishment for obvious indolence or carelessness, but indifferent whether they satisfy the contractor or not. His interests are nothing to them, and whether he makes money or loses it is no concern of theirs. Again, the contractor's success depends largely upon causes beyond his control. A change in the management of the prison may wholly change the system of discipline, and make it impossible for him to get his work done satisfactorily or properly. How important a factor is discipline is shown by the fact that the contract price of prison labor depends upon it almost wholly. In one of our large New York prisons it is 40 cents per day; in another, 80 cents; at the Columbus State prison it is held to be worth $1·10, we believe; in the Massachusetts prisons it is worth an average of 60 cents. Thus we see there is no fixed standard by which to measure the market value of a convict's labor, and, as we have said, it may appreciate or depreciate from causes wholly beyond the control of the contractor. This is an element of uncertainty which is often great enough to defeat the best laid plains of contracting manufacturers, and to render large investments in machinery, &c, hopelessly unprofitable. There is, on the other hand, a possibility that labor contracted for at 40 or 50 cents per day may, under a better system of prison management, become worth a dollar or even more; but the element of uncertainty is much greater in the prisons than outside. Even when all other things are favorable, the fact that a majority of prisoners are short term convicts, and are likely to be discharged, pardoned, drafted to other prisons or detailed for other duties before they have done enough good work to pay the cost of teaching them their trades, is a serious drawback. None of these obstacles are insurmountable, of course, but they are sufficiently serious to offset much of the advantage of cheapness. The Albany firms about to make the venture are financially strong and conspicuously enterprising. If any two houses can utilize convict labor profitably they are the two which have ventured the experiment. The members of the Molders' Union have themselves to thank for bringing about a change which they regard with so much alarm. That the Union will be broken is now evident, but we are not yet sure that those who run with non-union labor will not drive a good share of the advantage to the trade resulting from the bold policy of the two firms which have lately made the large prison contracts above alluded to.

Condition of the Blast Furnaces of the United States, April 1, 1877.

(Compiled for The Iron Age.)

Location.	CHARCOAL.					ANTHRACITE.					BITUMINOUS OR COKE.				
	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.	Total number of stacks.	Number reported in blast.	Capacity per week.	Number reported out of blast.	Capacity per week.
New England	18	6	410	12	766	1	.....	.....	1	130	.....	.....	.....	.....	.....
New York	17	5	330	12	892	42	18	3,850	24	5,480	.....	.....	.....	.....	.....
New Jersey	.....	.....	.....	.....	.....	16	5	1,160	11	2,300	.....	.....	.....	.....	.....
Pennsylvania	40	9	464	31	1 336	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lehigh Valley	.....	.....	.....	.....	.....	50	22	6,900	28	5,500	.....	.....	.....	.....	.....
Schuylkill Valley	.....	.....	.....	.....	.....	50	16	2,875	34	4,610	.....	.....	.....	.....	.....
Upper Susquehanna Valley	.....	.....	.....	.....	.....	25	6	1,050	19	2,980	.....	.....	.....	.....	.....
Lower Susquehanna Valley	.....	.....	.....	.....	.....	36	14	2,255	22	3,065	.....	.....	.....	.....	.....
Pittsburgh	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	5	2,150	6	2,375
Allegheny Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	3	2,330	7	2,675
Shenango Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31	9	1,840	22	4,560
Yough'eny Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	3	1,125	2	300
Juniata and Conemaugh Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	10	2,025	11	1,475
Maryland	17	5	349	12	590	3	1	150	2	300	4	.....	.....	4	455
Virginia	27	3	108	24	1,073	1	.....	.....	1	140	5	1	150	4	315
North Carolina	8	1	24	7	250	.....	.....	.....	.....	.....	1	.....	.....	1	(?)
West Virginia	6	1	120	5	413	.....	.....	.....	.....	.....	6	2	580	4	1,100
Ohio	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mahoning Valley	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	9	2,450	12	2,680
Eastern, Central and Northern	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	19	4,225	9	2,180
Hanging Rock	39	3	280	27	2,350	.....	.....	.....	.....	.....	15	3	1,150	12	1,590
Miscellaneous	3	1	100	2	135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hanging Rock	10	5	450	5	370	.....	.....	.....	.....	.....	2	2	600	.....	.....
Western region and miscellaneous	8	.....	.....	8	566	.....	.....	.....	.....	.....	1	1	300	.....	.....
Tennessee	18	1	100	17	1,218	.....	.....	.....	.....	.....	4	2	420	2	340
Georgia	8	1	110	7	245	.....	.....	.....	.....	.....	3	1	150	2	325
Alabama	12	4	455	8	515	.....	.....	.....	.....	.....	2	1	200	1	200
Indiana	1	1	140	.....	.....	.....	.....	.....	.....	.....	8	2	430	6	940
Illinois	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	3	925	9	3,015
Michigan	30	5	845	25	2,960	.....	.....	.....	.....	.....	4	.....	.....	4	1,050
Wisconsin	12	3	200	9	1,107	.....	.....	.....	.....	.....	3	.....	.....	3	1,000
Minnesota	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Missouri	11	3	555	8	1,160	.....	.....	.....	.....	.....	8	3	925	5	1,645
Texas	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	281	57	5,025	220	17,946	224	83	18,240	142	23,495	205	79	19,875	126	28,220

Furnace Capacity and the Outlook for the Iron Trade.

Third Paper.

To the Editor of The Iron Age—DEAR SIR: Business engagements of a pressing nature have until now prevented the preparation of additional matter.

As you have asked that the further papers of this series shall appear over my own signature, I do not feel at liberty to refuse a request so kindly made.

I beg leave to state that the conclusions reached are the result of patient investigation and careful study. It is not only possible, but highly probable, that others more competent may differ widely in their views and conclusions, and to such I can only say that I am at all times open to correction, and if I err either in facts or conclusions, I shall be most happy to be corrected or convinced, simply asking, if any discussion should arise, that it be conducted with fairness and courtesy, leaving the public to judge as to the merits of the questions involved.

In the article of February 15th, the ground was taken that a readjustment and relocation of the iron business of this country was taking place; that while our present furnace capacity was nominally far beyond our home wants, a very large number of furnaces could not possibly run without a marked increase in the price of pig iron, which was not likely to occur from reasons to be given.

In the paper of March 1st an attempt was made to show why the foreign ironmaster had been enabled to manufacture so cheaply, and what had led to the high cost heretofore in this country, in the face of our wonderful natural advantages. In this and succeeding papers we shall endeavor to ascertain whether iron cannot be made here at a cost low enough to enable us to sell at a profit in other than our own markets, as we are thoroughly convinced that the disposition of our surplus is the vital question upon which much of our future prosperity depends. If this can be shown, it follows that a very large number of furnaces, whose owners frankly admit that they cannot afford to make pig iron at present prices, are not likely to go into blast, and that really our present nominal annual capacity of 4,500,000 tons is practically not much more than half of this, and allowing the usual percentage of furnaces out, for repairs and alteration, it is more than probable that with a speedy revival of business the demand could not be supplied with cheap iron. With this increased demand, therefore, would come an advance, leading idle furnaces to "blow in," only to drag out a precarious existence until the increasing competition of cheaper irons would again compel them to suspend, with no more satisfactory result, possibly, than new good money gone after the old. We frankly admit that this is not a pleasant picture for the owners of millions invested in unprofitable iron works, but it is just what the world has had to face in some way or other for centuries, and will have to face again as times and methods and wants change.

It is a trite saying that it is a wise man who knows how to cut short his losses, and if we are not wholly mistaken the time is at hand for a display of this sort of wisdom, as we think that we can show before we conclude these papers, that during the last two years movements of no inconsiderable magnitude have been going on, tending toward the production of cheaper irons, and which before long will exercise a marked influence upon the whole iron trade of the country.

In our judgment, the profits in the future are mainly to be found in small savings in in the varied operations of manufacture. The materials employed are bulky, and enormous in quantity, demanding either mechanical or animal power to move them, and even under the most favorable circumstances requring repeated handlings. The saving of five cents a ton on each turn amounts to a considerable sum on the finished product.

If we take the statistics for furnace labor alone as prepared by Mr. W. E. S. Baker, and published in various trade journals (see Swank's "American Iron Report, 187 6," and *The Iron Age*, April 27, 1876), we can see how large a tax this has been in the past. This high labor has met us in every ramification of the business, from the mining of the raw material to the ultimate product. It has entered into the theories and writings of the political economist and has had a controlling influence in shaping legislation. We fully concede that labor is worthy of that full compensation, which will make it comfortable, respectable and contented, but this only strengthens the point, that we should exercise the closest economy in its use. If our labor consisted of slaves, or serfs, or paupers, its lavish use might be tolerated, but, as has been already stated, that condition only is desirable when both labor and capital are properly remunerated and consequently satisfied.

Pay labor well, but use as little of it as possible. It may be urged that if this practice generally obtained, the curious anomaly might present itself of a portion of labor well paid, and the balance idle. The answer is, that with the vast undeveloped resources of this continent there is room for all, and the adoption of the above policy would tend to create a prosperity, which steadily widening the range and increasing the scope of successful enterprise, would afford employment to all, as inclination and capacity might determine.

It is a sound rule of trade that there must be as little transportation of raw material as practicable. If this holds good generally, it is of prime importance in the manufacture of pig iron, where so large a percentage of the materials employed passes off as waste. It would seem to be the highth of folly to pay freight on slag, yet this has been largely done in the past, is now being done, and, to a certain extent, cannot be avoided in the future; but sound practice requires that this should be confined within the narrowest limits, for it is quite certain that if there are two establishments using practically the same materials and obtaining similar products, other things being equal, the one having its supplies close at hand will, in the long run, drive to the wall the other getting them at a distance.

Any handling of stock that can be avoided saves so much money. Supplies that can be carried at the mines or delivered each day for current wants can manifestly be handled with much greater economy than when large accumulations are required at the furnace to cover seasons of the year when deliveries are interrupted. In the former case a much smaller working capital will manage a given volume of business, and the saving of interest is an item of considerable importance.

The writer has seen in the fall of the year enormous accumulations of ore, coal and limestone to carry on operations until the opening of navigation, requiring large space, a labor charge in stocking, a second and larger charge for wheelage to the furnace when needed for use, and necessarily a compounding interest account of no mean proportions on original cost, freight charges and first handling.

The disadvantages do not end here. Within a few days a large Western furnace has been compelled to "bank up" on a fairly active and profitable market for the iron it makes, because its ore supply had been exhausted, and no more to be had until the opening of navigation. Then again, it is impossible to stock such large quantities under cover, and when the outside piles are reached the stock goes into the furnace saturated with moisture, causing an increased consumption of fuel and oftentimes the bad working of the furnace. This is especially the case if the stock is fine. The writer, over and over again, has seen mud dumped into the tunnel head, and the manager or owner wondering why the furnace "swung off."

The stocking of bituminous and semi-bituminous coals is especially to be deprecated, as it has been proved beyond controversy, both at home and abroad, that a loss of carbon occurs even under shelter, and notably so when exposed; in the latter case the greatest loss occurs within three weeks after mining.

Prof. Langley says: "I have found in "experimenting on our Pittsburgh coals, "that they suffer loss even when kept in "porcelain dishes in the laboratory of the "University, but that if the surrounding air "is perfectly dry, no appreciable loss takes "place at ordinary temperatures; on the "other hand, the air in its ordinary state "contains moisture enough to cause the "slow wasting of the fuel, and if the coal is "kept wet the loss is quite sensible. It is "greater and more rapid in large heaps "than in small."—(*Transactions of Institute of Mining Engineers, Vol.* I, *page* 286).

The loss by abrasion on all classes of fuel is a positive, and with frequent handlings, a serious loss. Each loss, as above enumerated, may be small in itself, but aggregated becomes important as many a balance sheet will show.

Both professional pride and business prudence demand the avoidance of waste, both of power and material, and the engineer or manager who adheres most closely to this rule is the one who comes nearest to the proper discharge of his duty.

Primarily, then, the furnace that has ore, fuel and flux in close proximity occupies a decided vantage ground as far as the mere cost of manufactures is concerned, and at first blush it would seem to indicate that the part of wisdom and profit would be to locate where such conditions obtain.

But here a good many disturbing elements present themselves. Nature does not seem disposed to give all its good things to one man or one place.

The richest and purest ores are found at a distance from fuel. (We are now only dealing with so-called mineral fuel. Charcoal will be considered when we reach charcoal furnaces). When ore is found in close proximity to coal it generally contains impurities which impair its value, requiring the admixture with purer and more expensive ores.

The ores proper of the coal measures (carbonates) are low in iron, and necessarily wrought at increased cost, as they lie in thin seams, embedded in slates, and requiring a large area to be worked over to yield quantity. Oftentimes the coal nearest to good ores is so impure as to prevent its use in smelting operations.

Many exceptionally desirable localities for the cheap manufacture of iron, as we shall hereafter see, are at long distances from the great markets of the country, and the cost of transportation equalizes the higher cost in dearer but more central locations, thus impairing natural advantages, until energy and capital shall in turn make them manufacturing centers. One point also must be kept in mind that within a few years improved processes have tended to neutralize to some extent the past advantages of cerain localities.

It is necessary, therefore, to look over the whole ground with extreme care, and to impartially weigh each point as it presents itself, as the only safe road to proper conclusions. EDMUND C. PECHIN.

A curious fact in connection with the destruction of oil tanks by lightning, has been noticed lately. These tanks are large round iron structures, made of boiler plate or tank iron, as this form of plate iron is called, and holding from 5000 to 20,000 bbls. of crude oil. Some of these have iron tops and others wooden, and the strange feature is that there is no instance known in which an iron top tank has been struck by lightning, while there are scores in which wood roofed tanks have been. The insurance companies are so well convinced of the advantage of iron roofed tanks for protection from lightning that they have agreed to reduce rates of insurance from an average of 5 per cent. to 3 per cent. where all iron roofs are used. The only explanation we can give of this is that the gas which rises from a wooden roofed tank is a good conductor, or that it extends to such a distance about the tank that the danger of explosion by the spark is greatly increased. The iron roofed tank does not allow of so great evaporation.

If all the rumors we hear are true, the hoop iron contract is not the only large one that has been lost to us to give employment to English mills. We hear, from a reliable source, that a large order for plates for California, amounting to some 2000 tons, has been or will be given to English bidders. The pig iron, bar and railroad iron trade of this country may be lost to England; but, as we have several times suggested, in the higher grades of iron the closing battle has not been fought yet. The "mother country" is getting down to "hard pan" as well as we, and when she gets there, and there is any improvement on this side of the water, there will be "blood upon the face of the moon."

Last week the steel rail mill of the Lackawana Iron and Coal Co., at Scranton, Pa., in the usual eleven turns, and running on 50 lb. rails 30 feet long, made the following record:

Total number rails rolled	6,173
Average per turn	561
Total tonnage during week	1,377·18
Average time rolling each bar during entire week, including all stops during and between turns, 77 seconds.	
Best single turn rails	740
Best double turn rails	1,414

Rolling time of above, consecutive, 1414 bars, 25 hours, 43 seconds; average, 60 3-8 seconds per bar; 1414 bars equal 4 miles and 90 feet of track. Greatest speed accomplished, 100 bars in 97 minutes, a little less than 53½ seconds per bar; 6173 rails will lay 17 miles, 2855 feet of track. These figures are not given as at all extraordinary, as the mill could easily add fifteen or twenty per cent. to the total above stated in case of necessity. They are interesting, however, as showing the point to which our average rail mill practice is gradually attaining.

The Avery Plow Works, Louisville, Ky., are turning out 700 plows and cultivators per day. They gave an order recently for 800 tons of steel.

The Future of Steel.

A lecture on the "Future of Steel" was delivered a few weeks ago at the Royal Institution of British Engineers, by Mr. Bramwell, F. R. S., past president of the Institution of Mechanical Engineers. After referring to the recent period in which all construction, whether of buildings, of bridges or of ships, was effected by the employment of stone, brick or timber, and to the great change which has been wrought in this respect, the lecturer pointed out that, even when cast and wrought iron were being used extensively, steel was not employed as a structural material at all. Steel was still a luxury; it was made in small portions, it was sold at high prices, as much as a shilling or eighteen pence a pound, or even more, and it was employed for swords, cutlery, surgical instruments, watch springs, mechanics' tools, needles, and other purposes such as these, where the quantity used was but trifling, and where the importance of superior material was such as to justify the large expenditure incurred. It was felt in those days, as indeed it had been felt for ages past, that steel was worth paying for because it was to be trusted; indeed, its trustworthiness had passed into a proverb—"as true as steel." Before describing the circumstances which had caused the great increase in the modern production of steel, the lecturer cleared the way by an account of the various forms of iron and of the modes of their preparation from the ore; this part of his discourse being illustrated by drawings of the blast and other furnaces which are employed in the manufacture. Iron, he said, we nowadays use in three great divisions—cast iron, wrought iron and steel. Cast iron is again divisible into ordinary cast iron, chilled cast iron and malleable cast iron. Wrought iron is also divisible into ordinary wrought iron and case hardened wrought iron. Steel is not thus divisible, but it may be of very varied composition, producing qualities ranging from those which possess great flexibility, even when quenched in cold water, to those which exhibit intense brittleness when so treated. Such variations may be due to differences of tenths of one per cent. in the amount of carbon with which the iron is combined; and a series of cubic models was employed to show that these small quantities, insignificant as they seem in description, yet bear a very appreciable relation to the general bulk of the mass of which they form part. In the days when steel was a luxury, it was made exclusively in small quantities, by taking wrought iron from which the workman had laboriously ejected all the carbon, by putting this iron into air tight fire brick boxes containing charcoal, and by heating it there during many hours. The iron took up the carbon, and the bars when they were withdrawn, being found covered with vesicles, the result was called blistered steel. The bars were neither uniform nor homogeneous, and the articles made from them were frequently enfeebled by bad welding, consequent upon this want of uniformity. About the middle of the last century, the method of casting steel, so as to produce homogeneous ingots, was discovered by Huntsman; but his process was very expensive, on account of the quantity of fuel which was consumed, and also on account of the cost of the necessary crucibles and of the skilled labor. At first the ingots were small; but Krupp overcame this difficulty by casting the contents of many crucibles into a single mold, and he was thus enabled to exhibit, in 1851, an ingot weighing 4500 lbs., and in 1862, one weighing 20 tons. In the meanwhile, the French chemist Chenot had been attempting to improve the manufacture; and he succeeded in making steel direct from the ore by a process which produced some of the best that had ever been seen, but which did not overcome the cost of the melting, and which has not been pursued to any extent in practice. About the year 1850 a German chemist, Riepe, devised a method which was used to a very considerable extent in England, and which consisted in stopping the puddling process used for making wrought iron before all the carbon had been expelled from the mass, and when just so much remained as to leave the product in the form of steel. This product was, however, an uncertain one, in consequence of the difficulty of ascertaining when the precise point had been reached—a difficulty which will be better appreciated when it is remembered that manufacturers now find it necessary to determine the quantity of carbon down to 1-20th part of 1 per cent. Riepe introduced another improvement, which holds its ground, by suggesting the use of old crucibles, reduced to powder and mixed with sufficient fire-clay to give cohesion, as a lining for the molds in which steel was cast. Formerly, when molds of sand or loam were used, such as suffice for iron castings, it was found that the intense heat of the fused steel melted the material of the mold, which thus became penetrated by spiculæ of steel, so that the casting was useless. The crucible material, having already been exposed to the same degree of heat, was able to resist it, and in this way the most perfect castings in steel are still produced. While Riepe was still endeavoring to find out a trustworthy indication of the proper stopping point for his process, Bessemer brought his great invention into the field. In his method air is blown through molten iron until all the impurities, and even some of the iron itself have been burnt out and expelled, and then a certain proportion of spiegeleisen, or cast iron containing a large admixture of carbon and of manganese, is poured in. The carbon restores to the iron the quantity which is required to convert it into steel; and the manganese plays a part which is manifestly useful, but which is not yet thoroughly understood. The manufacture of Bessemer steel gave a great impulse to the employment of this new material as a substitute for iron; but unfortunately the earlier specimens were very uncertain in their quality, and hence it fell into disrepute for railway bridges, for shipbuilding, and for many other purposes for which a minimum of variation among different samples was required. The next improvement was that introduced by Dr. Siemens, who melts in his regenerative gas furnace a mixture of pig iron and iron ore. The ore and the pig iron react one upon the other; the carbon of the pig iron and the oxygen of the ore unite so as to decarbonize the pig iron and to deoxydize the iron ore, the result being fluid wrought iron, which contains scarcely a trace of carbon. A small portion can be withdrawn from time to time, and tested to see whether the process is complete, and when it is so, the proper quantity of spiegeleisen is added to the bath, and the fluid metal is converted into steel. The whole process occupies about 11 hours, so that, including the short day on Saturday, 13 charges—each of 7, 9 or 12 tons—are obtained from each furnace every week. Moreover, in consequence of the power of testing the material before the spiegeleisen is added, this mode of manufacture can be relied upon with absolute certainty to produce steel of the precise quality that is desired. Thus, according to Mr. Bramwell, while the fact is undoubted that by the Bessemer process, when conducted by skilled men thoroughly acquainted with their business, trustworthy results can be obtained by the Siemens' process, it requires very great cleverness to obtain a result that is not trustworthy. The Admiralty demand that every sample of steel, if eight inches long, shall admit of being increased in length at least 20 per cent. by stretching before it undergoes fracture, and also that every sample, after being heated and quenched in cold water, shall be capable of being bent cold, the radius of curvature being not more than three-fourths the thickness of the sample, without any distress whatever being evinced. Of 14,000 samples which have been made by the Siemens process at the Landore Works, every one has fulfilled these conditions. It has not been a question of averages, but each sample has fulfilled the conditions. After observing that he had left himself but three minutes in which to deal with the avowed or prophetic subject of his lecture—the future of steel, and after defining steel to be any material which is composed of iron united with a very small proportion of carbon, or of some other alloy, which has been in fusion and is malleable, Mr. Bramwell proceeded to say that he believed steel would supersede iron for almost everything except the forge work of common blacksmiths. The future of steel, in his view, is practically the occupation of the whole province that was previously filled by steel and by wrought iron; and, further, that part of the province of cast iron, such as toothed wheels and castings of that kind, where, to give adequate strength, wrought iron would have been used had not the complexity of the form prohibited its employment, but where now, thanks to Riepe, steel may be melted and made to flow into the various shapes required.

Large Production of Charcoal I on.

We have received from Me srs. Dexter & Noble, of Elk Rapids, Mich., the following statement of the run of their furnace for March, which it is thought is the largest record by a charcoal furnace:

MATERIALS USED.

	Tons.	Pounds.
Cleveland and Lake Superior ores	1,413	830
McComber and Winthrop hematite	464	1,740
Kelly's Island and Petosky limestone	78	1,620
Charcoal, in bushels		123,740

Total pig iron made in March, 1173 tons, 1020 pounds.
Yield per cent. of ores, 62 48-100.
Limestone per ton pig, 150 16-100 pounds.
Charcoal per ton pig, 105 49-100 bushels.
Average temperature of hot blast, 600°.
Smallest day's work, 31 tons, 1245 pounds.
Largest day's work, 44 tons, 250 pounds.
Average pig metal made per day, 37 tons, 1928 pounds.
Average pressure of blast, 2½ pounds.
Total number days in blast, 268.
Total pig metal made during blast, 8572 tons, 1650 pounds.
Average pig metal made per day, 31 tons, 2210 pounds.
N. B.—Charcoal is taken direct from kilns, consequently no shortage, and blast not yet ended.

The following is a detailed statement of the iron made each day during the month:

DAILY REPORT, MARCH.

	Tons.	Pounds.
March 1	35	110
" 2	36	1,880
" 3	35	1,185
" 4	36	270
" 5	36	1,005
" 6	36	2,075
" 7	37	1,180
" 8	36	1,135
" 9	35	1,350
" 10	38	2,185
" 11	38	850
" 12	38	1,785
" 13	37	1,310
" 14	38	1,060
" 15	38	2,141
" 16	40	875
" 17	43	340
" 18	40	950
" 19	38	1,200
" 20	38	2,160
" 21	37	825
" 22	39	335
" 23	51	1,245
" 24	36	1,105
" 25	37	665
" 26	36	430
" 27	40	460
" 28	37	1,280
" 29	39	900
" 30	39	70
" 31	44	250
Total	1,173	1,020

—*Mining Journal.*

The age of the earth is estimated from the increment in the temperature as we penetrate its crust. The rate at which the earth cools can only be determined by making use of data confessedly imperfect, and from these Sir William Thomson finds that 100,000,000 or 200,000,000 years ago it first began to be crusted over by a solid film of rocks; that 10,000 years after its first crusting over the temperature of the crust increased two degrees Fahrenheit for every foot vertically descended below the zone of constant temperature. The present rate of increase is calculated at 1·51 of a degree.

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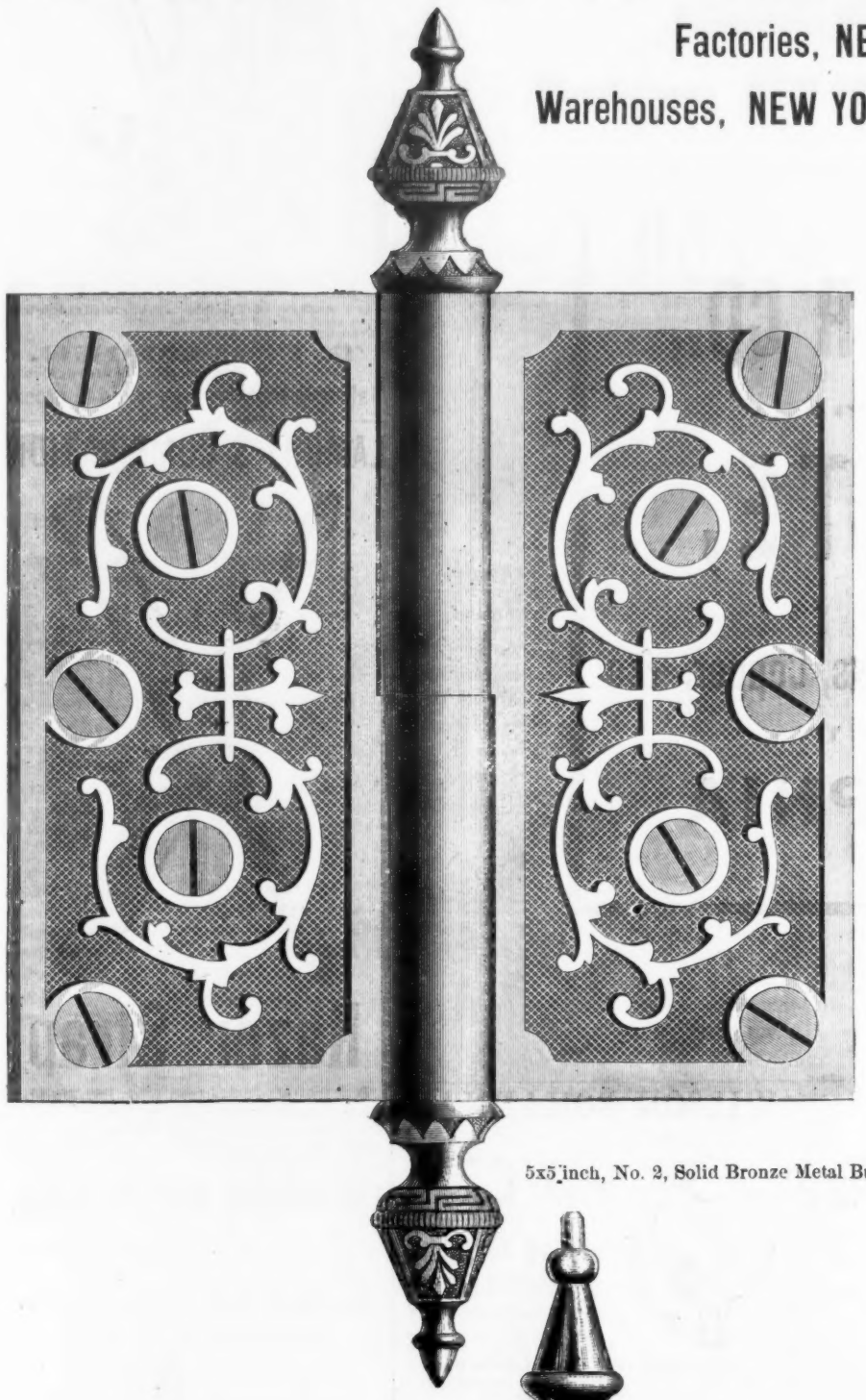
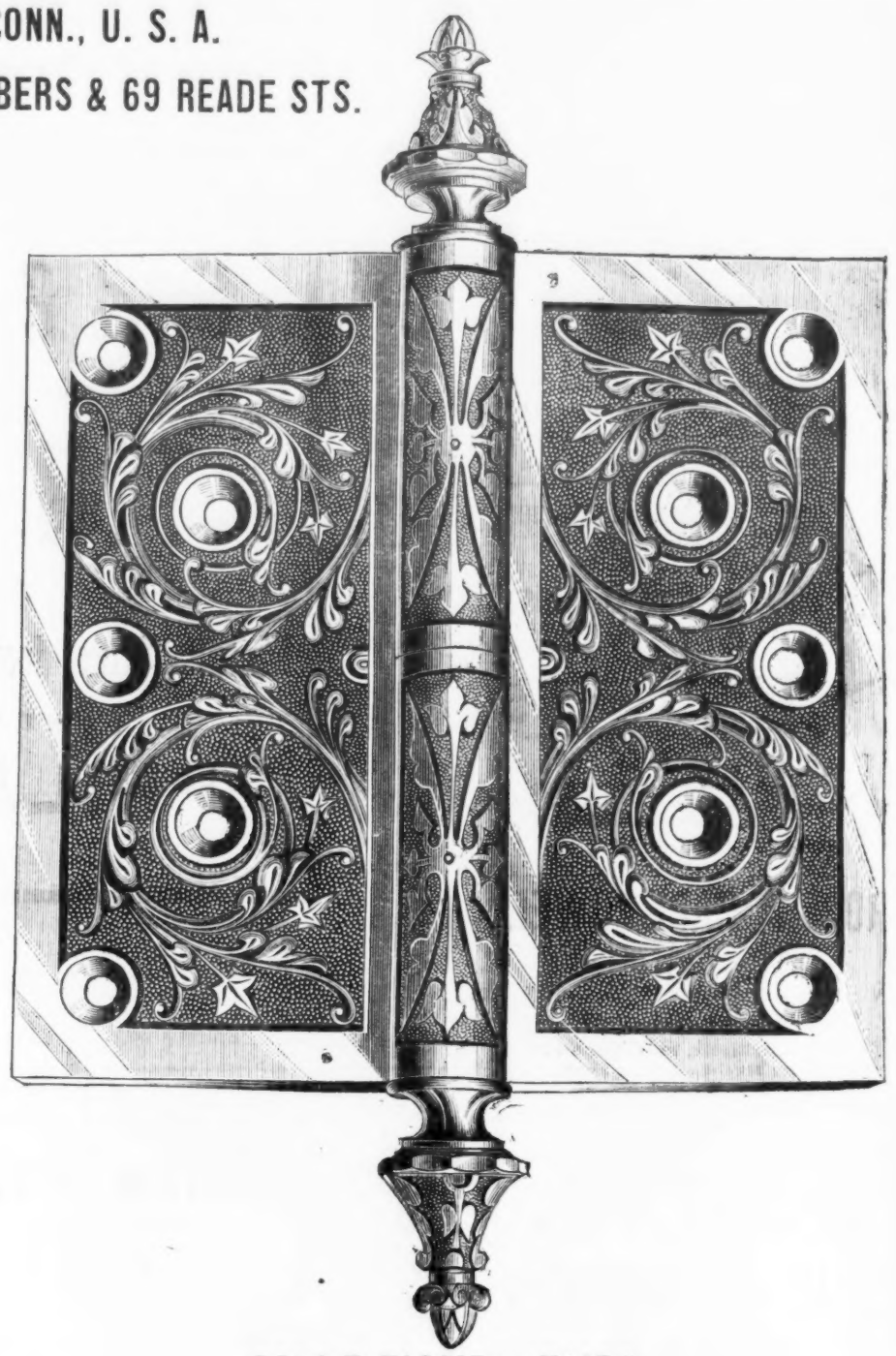
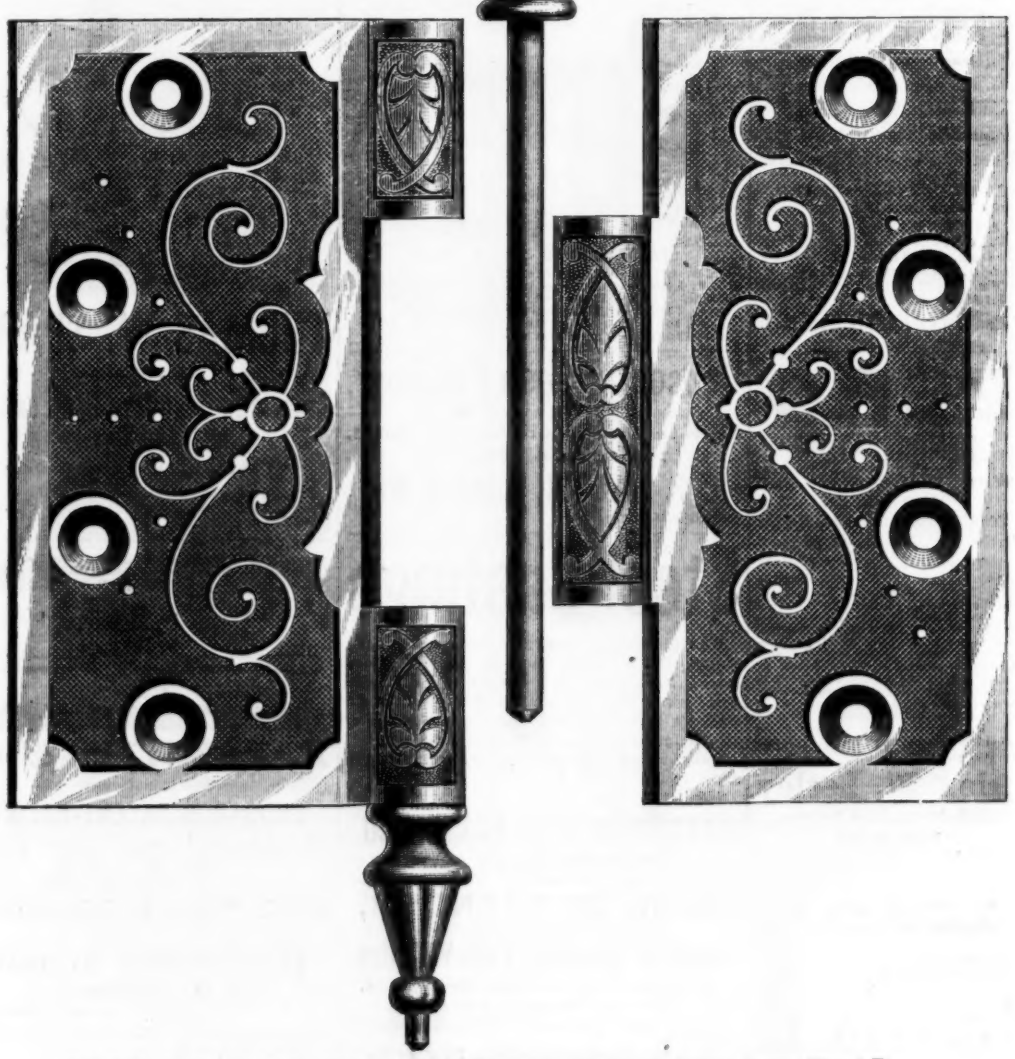


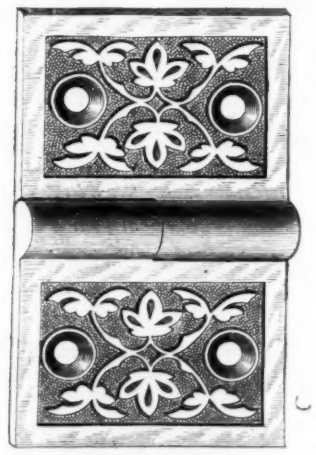
5x5 inch, No. 2, Solid Bronze Metal Butt.



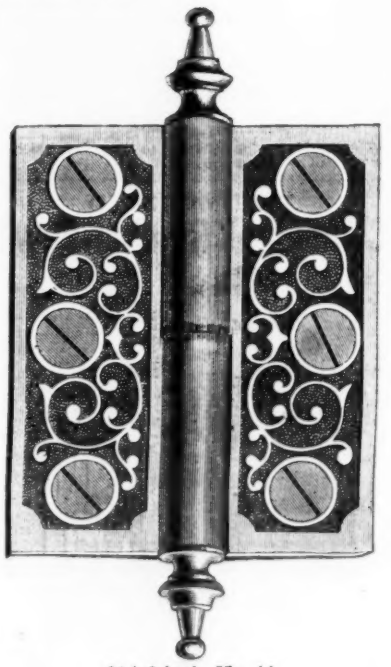
5x5 inch, No. 2½, Solid Bronze Metal Butt.



4½x4½ inch, No. 52, Plain Finish; No. 53, Japanned; No. 54, Japanned, Silver-Plated Tip.



1½x2½ inch, No. 8,
Solid Bronze Metal Shutter Hinge.



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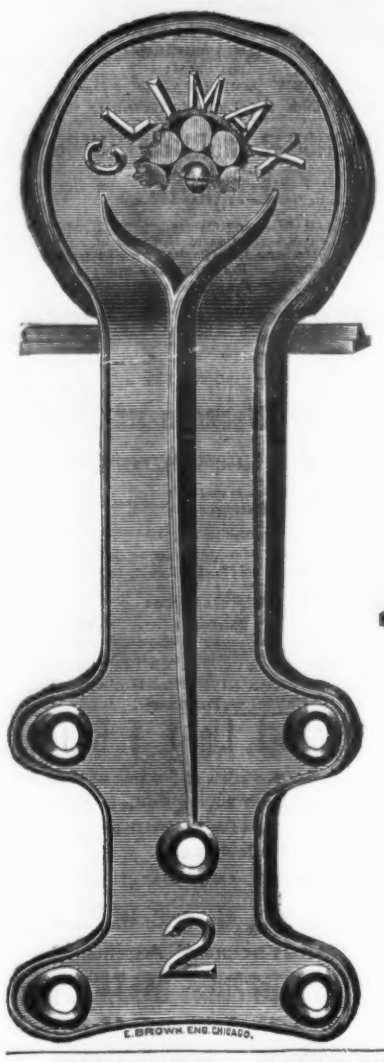

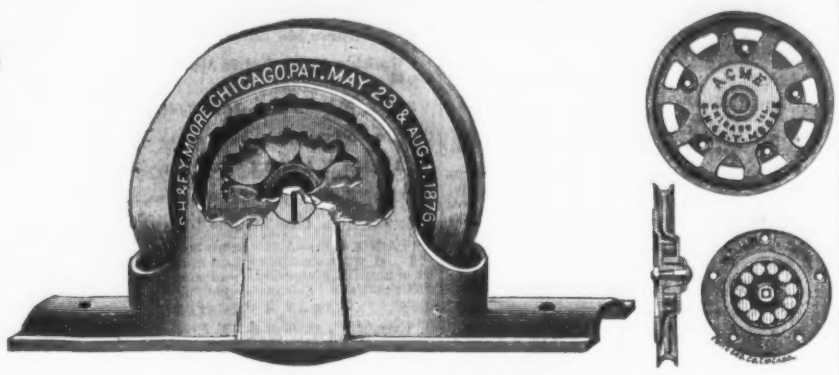

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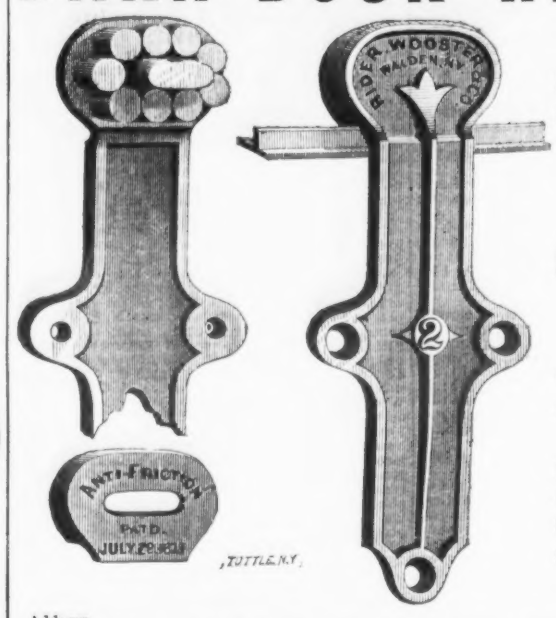

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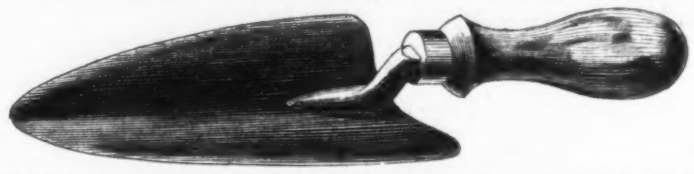

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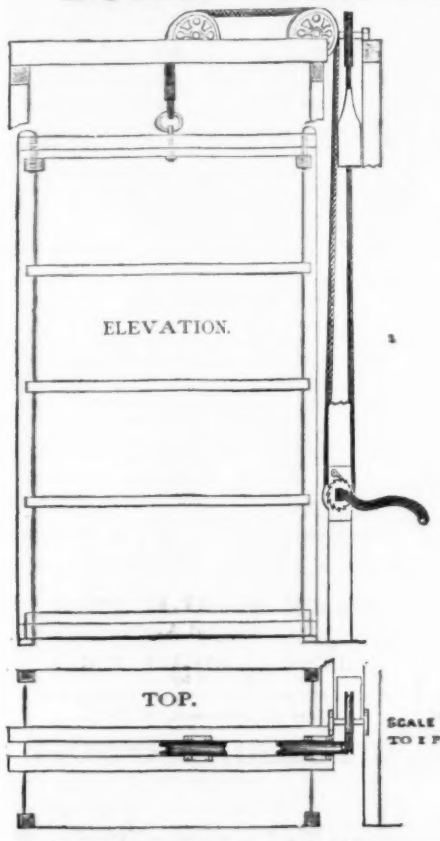

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CHAMPION BARROWS.

WITH WOOD OR IRON WHEELS.

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Molding, Trimming, Upholstering & Finishing Nails, Escutcheon Pins and Wire Nails

Of all kinds and sizes, with Flat, Oval, Depressed, or Countersunk Heads, with or without points.

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Special Notices.

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Bargains Extraordinary!

New and second-hand machinery for sale, as follows, the new machines being marked N, all others being second-hand:

Machine Tools.

PLANERS: 22 ft.x45 in. sq., $1900; 16 ft.x42 in. sq., $1250; 11 ft.x30 in. sq., $590; 10 ft.x30 in., N, $900; 8 ft.x27 in., $550; 8 ft.x26 in., N, $700; 7½ ft. x24 in., $375; 7 ft.x24 in., $325; 6½ ft.x24 in., $425; 6 ft.x24 in., $420; 5½ ft.x15 in., $230; 5 ft.x21 in., $340; 5 ft.x24 in., $325; 4 ft.x25 in., $465; 3 ft.x16 in., $350; crank planer, 2 ft. bed, 14 in. stroke, 16x 16, $300; hand planer, 30x14 in., N, $190.

GEAR CUTTERS AND MILLING MACHINES.—New Haven gear cutter, cutting 48 in. diam., $350; combined gear cutter and milling machine, N, 24 in., $450; milling machine, platen, 15x8, N, $340; Lincoln milling machine, $200; No. 3 Pratt & Whitney milling machine, with full set tools, $480.

UPRIGHT DRILLS AND DRILL PRESSES.—4 spindle Pratt & Whitney drill, N, $325; 52 in. Warner & Whitney upright drill, $325; Pond No. 2½ upright drill, N, $360; Pond No. 1 upright drill, N, $195; 30 in. upright drill, N, $125; 24 in. upright drill, N, $100; 3—21 in. upright drills, Pond's, each, $55; 20 in. upright drill, $40; 5½ ft. bed, 12 in. swing drill, or speed lathe, Morse & Co., $70; 5 speed lathes, N, 6 ft.x12 in., $75; 5 ft. bed x18 in. swing, $75; 5 ft.x14 in., $50; 6 ft.x14 in., $45.

SPLINING MACHINES.—Pond upright spliner, $75; small upright spliner, $50.

PRESSES (Combined Punches and Shears) and Blacksmith Shop Tools.—No. 5 Parker & Stiles, geared, N, press, $750; No. 3 Fowler power press, $360; geared double press, 7000 lb., $300; heavy power iron shear, $400; rolls and punch and shears, $750; power punch and shears, $300; 45 in. pulley chucking lathe, with 36 in. Horton 3 jawed chuck, $310; 8 ft. bed 44 in. swing pulley chucking lathe, $200; 10 ft. bed 48 in. swing pulley chucking lathe, $140; bolt cutter and nut tapper, 1¼ in., $175; No. 1 Durrell nut tapper, N, $240; combined pipe and bolt cutter and nut tapper, $225; bolt cutter and nut tapper, 1¼ in., $125; bolt cutter and nut tapper, N, 2 in., $300; bolt cutter and nut tapper, N, 1½ in., $350; bolt cutter and nut tapper, N, double-headed, 1¼ in., $450; bolt pointer, N, $120; tire, blank, rivet and plow bolt machine, $525; fox or pipe fitting lathe, 5 ft.x15 in., $225; 125 lb. steam hammer, $275; steam trip or helve hammer, striking 1 ton blow, $700; 3—400 and 600 lb. drop presses, $350 and $400 each; trip or helve hammer, $150; 80 in. swing, 14½ ft. bed, boring lathe, $750.

ENGINE LATHES.—All back geared, screw cutting, complete with center rests, face plates, countershafts, etc., 24 ft. bed, 54 in. swing, $2500; 16 ft. bed, 60 in. swing, N, $2200; 25½ ft. bed, 36 in. swing, N, $1550; 22 ft. bed, 26 in. swing, N, $600; 22 ft.x24 in., N, $550; 20½ ft.x28 in., N, $925; 18 ft.x33 in., $700; 20 ft.x60 in., $1600; 20 ft.x24 in. compound rest, power cross and independent rod feed, N, $660; 16 ft.x21 in., $600; 16 ft.x27 in., N, $550; 16 ft.x26 in, N, $595; 16 ft.x24 in., N, $475; 14 ft.x32 in., $400; 14 ft.x30 in., $375; 14 ft.x36 in., N, $575; 15 ft.x30 in., $500; 14 ft.x15 in., $300; 10 ft.x30 in., N, $320; 10 ft.x17 in., N, $250; 9 ft.x18 in., N, $360; 8 ft.x19 in., $225; 8 ft.x17 in., $200; 8 ft.x20 in., $200; 7 ft.x21 in., $170; 7 ft.x18 in., N, $230; 7 ft.x17 in., N, $230; 7 ft.x16 in., N, $190; 6 ft.x17 in., N, $95; 2—6 ft.x 15 in., each, $230; 6 ft.x16 in., $215; 6 ft.x17 in., $200; 6 ft.x18 in., $195; 5 ft.x20 in., $145; 5 ft.x18 in., N, $230; 5 ft.x18 in., $168; 5 ft.x15 in., $210. Not screw cutting: 15 ft.x21 in., $150, double-headed; 11 ft.x12 in., $125; 8 ft.x17 in., $215; 8 ft.x 18 in., $125; 6 ft.x18 in., $120; 5 ft.x18 in., $95; 7 ft. x20 in., $170.

CHUCKS.—36 in. Horton chuck, $140; 24 in. 4 jawed chuck, N, $105; 15 in. 3 jawed chuck, $50; 12 in. 3 jawed chuck, N, $44.

Portable and Stationary Engines and Boilers.

300 h. p. 2 cylinder vertical engine, 22x36, $3200; 2 stationary horizontal engines, cylinder, 22x30, each 150 h. p., N, each, $2800; 150 h. p. Corliss engine, 20x48, $1000; 125 h. p. sta. hor. engine, 18x42, N, $2425; 100 h. p. sta. hor. boiler, $740; 80 h. p. engine, 14x48, $1600; 80 h. p. sta. hor. Corliss engine, 14x48, $1500; 80 h. p. engine, 2—50 h. p. boilers, all piping, $2600; 75 h. p. sta. hor. engine, N, 14x36, $1650; 36, $1600; 75 h. p. Putnam Machine Co. sta. hor. engine, 16x36, $1600; 50 h. p. sta. hor. engine, 14x30, $1000; 50 h. p. sta. hor. engine, 12x36, N, $1475; 75 h. p. upright Corliss engine, 16x36, $1000; N 60 h. p. boiler, $775; 60 h. p. boiler, $600; 4—60 h. p. locomotive firebox boilers, each, $650; 50 h. p. engine, $800; 50 h. p. engine, $600; 50 h. p. boiler, $500; 44 ft. 30 in. smokestack and bed casting, $110; 2—50 h. p. boilers, $750; 50 h. p. sta. hor. boiler, $425; 50 h. p. locomotive firebox boiler, $375; 4—45 h. p. sta. hor. boilers, each, $375; 2—35 h. p. sta. hor. boilers, each, $300; 35 h. p. locomotive firebox boiler, $350; 30 h. p. locomotive firebox boiler, $290; 50 h. p. upright engine, Chubuck's, 2—9x18 cylinders, $1050; 2—50 to 60 h. p. 2 flue boilers, each, $425; 40 h. p. 2 flue boiler, $140; 40 h. p. sta. hor. engine, 12x24, $740; 40 h. p. upright engine, 12 x24, $700; 35 h. p. boiler, $300; 35 h. p. engine, 12x 36, $750; 35 h. p. Hoadley portable engine, $1100; 35 h. p engine, 12x36, $525; 35 h. p. boiler, $290; 30 h. p. Corliss engine, 10x24, $650; 30 h. p. portable engine, 12x16, $1375; 30 h. p. Hoadley engine, portable, 11x18, $900; 35 h. p. sta. hor. engine, 12x24, $625; 30 h. p. upright engine, 11x24, $385; 25 h. p. sta. hor. engine, 8x25, $500; 25 h. p. sta. hor. engine and 30 h. p. upright boiler, $1100; 25 h. p. upright engine, 2—8x12 cylinders, $475; 20 h. p. vertical engine, 10x12, $600; 20 h. p. upright boiler, $900; 18 h. p. Hoadley portable engine, 9x12, $925; 18 h. p. upright boiler, $175; 15 h. p. sta. hor. engine 9x11, $340; 2—12 h. p. sta. hor. boilers, each $125; 10 h. p. Baxter engine, $875; 10 h. p. upright Haskins engine, $330; 7 h. p. upright boiler, $150; 8 h. p. upright engine, 4½x15, $75; 8 h. p. upright boiler, $125; 7 h. p. portable engine, 5½x10, $300; 6 h. p. Baxter engine, $525; 4½ h. p. Bookwalter portable engine, $300; 4 h. p. Baxter engine, $475; 4 h. p. vertical engine, N, $200; 6 h. p. portable engine, 5x10, $390; 6 h. p. portable engine, 5x10, $460; 6 h. p. portable engine, 5x10, mounted, $340; N 6 h. p. Haskins vertical engine, $350; 6 h. p. upright boiler, $125; 5 h. p. upright engine, 6 h. p. boiler, shafting and pulleys, $300; 5 h. p. upright engine, $160; 5 h. p. upright boiler, N, $140; 5 h. p. portable, sectional boiler, $65; 4 h. p. upright Haskins engine, N, $280; 4 h. p. hot air or caloric engine, $550; 3 h. p. hot air or caloric engine, $325; 3 h. p. upright engine and boiler, N, for yacht, $280; 3 h. p. engine, $130; 2½ h. p. upright boiler, $110; 2½ h. p. upright boiler, N, $90; 2½ h. p. sta. hor. boiler, $70; 1½ h. p. upright engine and boiler, N, $180; 2 h. p. upright engine, N, $110; 2 h. p. yacht engine and boiler, N, $220; 2 h. p. upright engine, $100; 1½ h. p. portable engine, $110; 2 h. p. upright yacht engine, N, $130; 1 h. p. upright engine, 2x4, $50; 1 h. p. upright boiler, $56; 1 h. p. engine and boiler, $125; new 5 in. steam gauges, 160 lbs., $6.20 each; new 18 in. steam whistle, $75; new 12 in. steam whistle, $60; new 8 in. steam whistle, $20; governors, all sizes.

Portable Engines and Circular Saw Mills.

35 h. p. portable engine and right-hand 48 ft. circular saw mill, Lane set works, complete, with saws, belting and all shafting, $1900; 30 h. p. portable engine, 60 ft. saw mill, shafting, pulleys, etc., $1300; 30 h. p. portable engine, with left-hand 25 ft. circular saw mill and set works, Lane's patent, complete with saws, belting, shafting and pulleys, $1850; 16 h. p. portable engine and right-hand 37 ft. circular saw mill complete, with set works, saws, belting, emery wheel and tools, $1675; 20 h. p. portable engine, with left-hand 25 ft. Lane saw mill and set works complete, with saws, belting, shafting, pulleys and all tools, $1750.

Fire Engines, Steam Pumps, &c.

First-class Amoskeag steam fire engine rotary pump, $1200; 2 hand fire engines (Hunneman) with two hose carriages for same, $425 each; new hand fire engine and hose carriage, $350; 4 wheel hose carriage, $125; 4 wheel hose carriage, $190; 3 Burleigh rock drills, tunnel pattern, each $200; heavy steam derrick, 65 ft. mast, 52 ft. beam, $550; American portable fire extinguishers, $18 each; No. 9 Knowles pump, $300; No. 7 Sutherland steam pump, $180; rotary fire pump, N, $125; balance wheel steam pump, $275; 2 supply pumps, Corliss, each $125; Holly Mfg. Co. fire or supply pump, $150; size B Blake pump, $190; No. 4 Earle pump, $175; No. 4 Blake pump, $150; No. 3 Knowles pump, $165; No. 3 Knowles, $145; No. 2 Wright pump, N, $155; No. 2 Washburn pump, $110; No. 1 Knowles pump, $80; No. 1 Knowles, 90; No. 0 Wright pump, N, $80; No. 1 Wright pump, $67; double-acting force pump, $50; upright boiler feed pump, $40; 2—200 gal. copper kettles, each $300; 425 gal. copper kettle, $300.

Special Notices.

Blowers and Fans.

No. 7 Sturtevant blower and hot-blast apparatus, $400.

Gearing and Wire Rope.

Pair 28 in. wood and iron toothed level gears, 5 in. $28; pair bevel gears, 5½ in. toothed, $20; 800 ft. 1¼ in. wire rope, $240; 40 ft. ⅝ in. wire rope, $7.

Saw Mill and Wood Working Machinery.

Excelsior machine, N, $275; 65 ft. circular saw mill, carriage, saw, etc., $300; upright re-sawing machine, 36 in. stroke, $390; 3 in. steel saw arbor, complete, $70; bull wheel complete, $95; Brown Frost log dog, $22; 112 ft. ¾ in. heavy log chain, with sheave, ¾ lb., 4½c.; up and down saw mill, to saw 25 ft. with 2—24 in. water-wheels, $300; up and down saw mill, to saw 28 ft. $200; double board edger, to edge 18 ft., $90; 16 ft. board edger, $60; 9 ft. edger, $55; 10 ft. edger, $50; 10 ft. bed side jointer, $50; upright bolt shingle mill, 36 in saw and jointer, $325; shingle mill and jointer, $155; shingle mill and jointer, $90; shingle mill and jointer, $60; clapboard machine and power sapper, $120; bed slat, clapboard and shingle sawing machine, $100; iron frame lath sawing machine, 3 saws, $185; iron frame lath sawing machine, 6 saws, $150; 26 in. rotary bed planer, N, $325; 26 in. rotary bed planer, $240; 26 in. rotary bed planer, N, $235; 26 in. rotary bed planer, $180; 26 in. rotary bed planer, $165; 24 in. rotary bed planer, N, $190; 24 in. rotary bed planer, $160; 22 in. rotary bed planer, $140; No. 3 N. S. Woodworth planing, tonguing and grooving machine, R. Ball & Co.'s make, N, $950; No. 3 Woodworth double planing, tongning and grooving machine, Witherby, Rugg & Richardson make, $900; 3 of R. Ball & Co.'s No. 4 Woodworth planers and matchers, each $640; Woodworth double planer and matcher, No. 0 size, R. Ball & Co.'s make, N, $725; No. 2 planer and matcher, Woodworth, M. Cochrane & Co.'s make, $475; R. Ball & Co.'s excelsior planer and matcher, N, $375; Woodworth planer, 24 in., Ball & Co.'s make, $545; No. 2 Woodworth planer, 24 in., Richardson, Meriam & Co.'s make, $260; 24 in. Baxter Whitney cylinder planer, $175; 18 in. pony planer, N, $82; 16 in. sta. bed Woodworth planer, $90; power matcher, jointing, tonguing and grooving to 16 in. wide, $225; power matcher, 14 in., $160; 16 in. buzz planer, $80; 8 in. buzz planer, $75; 5½ in. buzz planer, $37; bobbin lathe, N, $105; bobbin lathe, $85; dimension planer, 24 in. x8 ft., $380; Gray & Wood's planer, 24 in.x9 ft., $225; Daniels' planer, planing 32 ft.x31 in., $275; Daniels' planer, planing 20 ft.x30 in., $225; Daniels' planer, 14 ft.x25 in., $225; Daniels' planer, 8 ft.x24 in., $150; Daniels' planer, 8 ft.x24 in., $190; No. 1½ Davis dovetailing machine, $160; Blanchard spoke lathe, $150; ax handle and spoke lathe, iron frame, N, $175; plow handle turning lathe, N, $300; hor. cornering and shaping machine, R. Ball & Co.'s make, $45; Andrews box board sawing machine, 42 in. saw, $290; box board matching machine and edger, $70; swing saw, $15; box board matcher, N, $65; large lot stave sawing, planing, jointing, and working machinery for tight barrel work, full particulars upon application; cylinder stave sawing machine, saw 11x19, $70; cylinder stave sawing machine for kitts, saw 11x15, $75; nail keg stave saw machine, $225; Empire wood splitting machine, No. 1 size, $790; Wheeler, Melick & Co. single h. p. with wood sawing attachments, $165; Gray & Sons single h. p., $90; capstan h. p., 1 or 2 horse, $85; gear variety molder, N, $146; 3 side Monitor molder, Russ' patent, R. Ball & Co.'s make, works 14x7, N, $500; 4 side Monitor molder, R. Ball & Co.'s make, works 14 x7, N, $575; No. 2 Lee 4 side molder, $520; No. 2 Houston molder, 4 side, N, $225; No. 2 Rogers & Co. molder, 3 side, $325; large size iron frame molder, R. Ball & Co., 3 side, N, $360; side Smith molder, 10 in., $275; sash molder, Ball & Co., 3 side, N, $190; wood frame sash molder, Ball & Co., N, $140; 4 side blind shade sticker, $120; sash molder and dovetailer, $90; No. 2 H. B. Smith tenoner, double heads and copes, $150; No. 4 Ball tenoner, $140; No. 4 Ball tenoner, $125; wood frame tenoner, $80; wood frame tenoner, $45; blind slat tenoner, $75; blind slat crimping machine, $45; No. 2 Smith power mortiser, $125; iron frame mortiser, $55; horizontal car boring machine, Ball & Co., N, $80; No. 4 Richards, London & Kelley band saw, N, $350; No. 1 R., L. & K. band saw, $150; band saw machine, N, $140; band saw machine, N, $100; Rollstone scroll saw, N, $90; 2 jig saws, each $30; jig saw, $87; Wright jig saw, $62; squaring and mitering saw table, $38; 4 wood frame saw benches at $30, $26, $21 and $18; railway cut-off saw, iron frame, N, Ball's, $92; cut-off saw benches, $30; 26 in. cut-off saw arbor and bench for wood sawing, $30; Weaver hand-power circular and scroll sawing, boring and planing machine, N, $140; Baldwin wood lathe, hollow auger style, 2 revolving disks carrying cutters, $175; machine wood or gang lathe, 6 ft. bed, with patterns and tools, $240; set clothes pin making machinery, $300; foot lathe, N, $60; foot lathe, N, $30; 20 ft. bed x17 in. swing pattern maker's lathe, with large assortment of tools, $110; 24 in. wood turning lathe, N, $96; 16 ft. bed, 24 in. swing wood lathe, $95; 20 in. wood turning lathe, N, $87; 7 ft. bed, 19 in. swing wood lathe, $45; 3 head and tail stocks for wood lathes, each $20; stretching machine with three chucks, $75; No. 3 rod, pin and dowel machine, N, $24; ¾ in. rod, pin and dowel machine, $8; Smith blind stile boring machine, $63; 2 horizontal boring machines, $33 and $26; boring machine and chucks, $30; Eureka upright boring machine, N, $60; squaring and grooving machine, $50; sash boring, grooving and turning machine, $35; boring shaft and full set bits, $25; knife grinding machine, automatic, $62; 3 planer knife grinding machines, N, each $16; matcher cutter setting machine, $9; double emery arbor and stand, $36; emery wheels and arbors, $18 and $20; 4 ft. steel saw arbor $15; 20 steel saw arbors, N, large and small, from $9 to $21; 3 grindstones and frames, $4, $8 and $7.50.

Water Wheels.

All complete with shafting, couplings, gears, boxes, &c., 5½ ft. Ryder wheel, $270; 5 ft. Blake wheel, $375; 5 ft. Whitney wheel, $350; 3 ft. Whitney wheel, $275; 4¼ ft. Cole wheel, $500; 2—27 in. wheels, each $75; 2 ft. wheel, $130; Cottrell & Babcock water wheel regulator, good as new, $75; 2—27 in. water-wheels, each $75.

Iron Pulleys, &c.

Bored, turned, set, screwed and balanced, 86x20, 5c. lb.; 6½ ft.x20 in., 4½c. lb.; 54x30½, 4c. lb.; 5 ft. x12, N, 5½c. lb.; 5 ft.x15, 3½c. lb.; 48x30½, 4c. lb.; 48x12½, 5c. lb.; 48x10, 4½c. lb.; 42x22½, 5c. lb.; 42 x14, 5c. lb.; 42x9½, 2c. lb.; 4 binder rolls, 26x28, $18; 25x21, $10; 2—22x19, each $8—all complete; lot of 4 in. cast iron pipe, 3c. lb.

Circular Saws.

53 in. Hoe inserted tooth saw, $40; 49 in. Hoe inserted tooth saw, $70; 48 in. Emerson inserted tooth saw, $50; 47½ in. solid saw, $12; 40 in. cut-off saw, $22; 38 in. cut-off saw, $19; 32 in. cut-off saw, $12; 29 in. splitting saw, $9; 22 in. splitting saw, $5; 16 in. cut-off saw, $2.50.

Steam Yachts.

1—35 ft. long, 6 ft. beam, cost $2200; price, $950. 1—26 ft. long, 5½ ft. beam, cost $2000; price, $625. 1—15 ft. long, 3 ft. beam, N, $250; 1—18 ft. long, 4 ft. beam, N, $355; 1—21 ft. long, 5½ ft. beam, N, $400.

Elevators.

Otis steam elevator machine, engine 6x10, $750; 6000 lb. lift elevator, N, $500; 4000 lb. lift elevator, N. $400; 2000 lb. lift elevator, N, $300; 1000 lb. lift elevator, N, $225.

Belting.

82 ft. 20 in. belting, $105; 100 ft. 20 in. double, $200; 100 ft. 8 in., $45; large lot smaller sizes.

Grist Mill Machinery.

2—36 in. Holmes & Blanchard portable grist mills, geared, each $275; 30 in. Harrison portable grist mill, $230; 20 in. Harrison portable grist mill, N, $160; 20 in. Harrison portable grist mill, N, $250; 12 in. Harrison hand mill, N, $75; 30 in. portable grist mill, $125; 2—30 in. Old's patent portable grist mills, each $110; Bogardus mill, $125; Holmes and Blanchard corn and cob cracker, $50; run corn and feed stones, 4½ ft. diameter, with curb, hopper, hopper frame and elevator, $68.

Cotton, Woolen and Waste Machinery, Sewing Machines, &c.

Extractor, $90; waste wheel, $25; 2 large waste boxes, 4½ ft.x34 in.x30 in., each $6; small crane or lifting machine, $10; No. 2 card (double), cyl. 26 in. x24 in., $125; No. 2 card (double), cyl. 34 in., $100; No. 3 card (double), cyl. 84 in., $75; picker, 31 in.x 23 in., $25; 2—27 in. Kellogg pickers, N, $150 each; 2—18 in. Kellogg pickers, N, $125; 1—14 in. Kellogg cotton opener, N, $60; cloth shearer, $35; 200 sheets press paper, 21x30, $8; brass plates, 10x31, 800 @ $27; press screw, 3 ft.x8 in., and bar 6 ft., $8; 6 finisher cards, with rubb roll, feed aprons, workers and strippers, each $150; gill machine and baiter, N, $60; 12—36 in. cotton cards, each $45; jack, 192 spindles, $175; Kitson picker, largest size, $240; 22 in. pricker, $45; 36 in. lapper, $150; 32 in. shears, $75; fulling mill, $50; grinder, $45; press, $25; 5-4 brusher, $30; cloth machine, N, $90; 2 pepper leggers, $100 each; 3 Aiken leggers, $125 each; 2 Aiken footers, each $75.

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Machinists and General Machine Dealers,
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Position as traveling salesman or clerk in any capacity. More than five years' experience in the general Hardware business, Agricultural Implements and with the Stove trade, having for the last two years traveled for Messrs. Richardson, Boynton & Co., New York. Will go in any section of the country. Best of reference for ability, character, &c.
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Salesman, one who understands Cutlery and Hardware, and has a good acquaintance with Western and Southern buyers.
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The Machinery in the Works of the Utica Steam Engine Co., comprising Large Face Plate Lathe, Engine Lathes (large and small), Planers, Slotters, Shapers, Lanback Universal Drills, Bolt Cutter, Saws, Upright Drills, Cranes, Steam Hammer, Cupola, Blower, Fire Pump, Hose, &c, &c.
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ROLL TURNER WANTED.

A first-class roll turner is wanted for a mill making merchant bars, bands, plates and hoops. Principal work on bands and hoops. Steady work. State terms, where last employed, etc.
Address, **C.,**
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FOR SALE.

A well established Hardware Trade, of 12 years' standing, in a good railroad town of 2500 inhabitants on the O. & M. R. R., in Indiana. Good, clean stock of hardware, stoves, tinware and agricultural implements. Will sell part or all. Will give good payments. Cause for selling, loss of health.
Address, **HUGH McNABB,**
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FOR SALE.

Second-Hand Engines, Machinery, &c.

4 pairs of double Engines, 26 in. diam.x24 in. stroke.
8 Engines, 22 in. diam.x30 in. stroke, Horizontal.
1 Engine, 16 " 24 " "
5 Engines, 12 " 16 " "
3 " 12 " 16 " Vertical.
7 " 12 " 12 " Horizontal.
2 " 12 " 12 " Vertical.
1 Engine, 9 " 12 " on upright postframe.
1 " 10 " 12 " double A.
7 Engines, 10 " 6¾ " oscillating A.
3 No. 5 Worthington Pumps.

The above are all in good working order, having been used but little. Photographs of engines will be sent to parties desiring to purchase.

We also offer for sale a large assortment of **Old Gunboat Plate Iron** of various sizes, from ¼ in. to 1 in. thick, and **Cast Iron Water and Gas Pipes** of all sizes.

SHICKLE, HARRISON & CO.,
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A young man of thorough education in all branches of iron manufacture, and several years' practical experience in silver and iron mining and general foundry and car wheel business, desires a position as superintendent of mines, furnaces or foundry business. Best reference furnished. Address
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NEW PRACTICAL WORK
ON THE
DIMENSIONS OF
IRON and STEEL.

By PROF. J. J. WEYRAUCH, of Stuttgart.
Translated by
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With an Appendix by
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For sale by
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15 Astor Place, New York.
Mailed, prepaid, on receipt of $2.00.

Second Hand and New MACHINE TOOLS.

The following machine tools, new and second hand, made by the New York Steam Engine Co., for sale very low.

NEW TOOLS (N. Y. S. E. Co.'s make):

One Engine Lathe, 14 in. swing, 9 ft. bed; four Engine Lathes, 20 in. swing, 8 ft. bed; one Engine Lathe, 20 in. swing, 10 ft. bed; one Engine Lathe, 32 in. swing, 15 ft bed; three Iron Planers, 22 in. wide, planes 4½ ft. long; one Iron Planer, 26 in. wide, planes 6 ft. long; one Iron Plane, 30 in. wide, planes 8 ft. long; one Iron Planer, 36 in. wide, planes 18 ft. long; two Upright Drills, 60 in. swing, very heavy; two Shaping Machines, 8 in. stroke; also, a large number of Lathe Chucks.

SECOND HAND (N. Y. S. E. Co.'s make),

Two Engine Lathes, 20 in. swing 8 ft. bed; two Engine Lathes, 22 in. swing, 8 ft. bed; one Engine Lathe, 26 in. swing, 13 ft. bed; one Engine Lathe, 76 in. swing, 36 ft. bed; one Iron Planer, planes 70 in. wide, 52 in. high, 27 ft. long; also a large number of Lathe Chucks.

MISCELLANEOUS:

One "Davy Bros." 1200 lb. Steam Hammer; one "Ferris & Miles" 2000 lb. Steam Hammer; one No. 4 Wood, Light & Co. Drill, 32 in. swing; three 21 in. swing Upright Drills; three 4 Spindle Drills; three common Milling Machines; one Brown & Sharpe Universal Milling Machine; one 24x24x5 ft. Planer; &c., &c.

The above tools can be seen at

The George Place Machinery Agency,
121 Chambers and 103 Reade Sts., N. Y.

A Young Man,

of 12 years' experience in the Hardware Business, and Secretary of the Group (15) on Hardware during the Centennial Exhibition,

Desires Employment.

References first-class. Address
H. K. STEINMETZ, 1817 Green St., Philadelphia.

Special Notices.

Ramsey's Car Truck Shifting Apparatus.

The advantages gained by using Ramsey's Car Truck Shifting Apparatus, are as follows:

1st.—The power required to run a car on the level track is sufficient to separate the trucks from a car body.

2d.—It avoids twisting or straining the car frames.

3d.—The manufacturing cost of this Shifting Apparatus will not exceed one hundred dollars. And each one is capable of doing more work with less strain to the car, and without the assistance of an extra Steam Engine, than a Steam Hoist, costing twelve thousand dollars.

At each one of the principal stations where car wheels are regularly tested to see how they stand the journey, a switch is placed, having a depression or pit about eighteen inches deep, with gentle inclines at each end, and on each side a narrow track, remaining on the level, upon which is small but strong trucks, designed to carry supporting beams or cross-bars extending from one to the other across the pit, for the purpose of bearing the car body, while the trucks run down the incline rails to the pit.

A Working Model of this Apparatus is on exhibition at

220 S. Fourth Street, Philadelphia, Pa.

Communications may be addressed to

RAMSEY & SCARLETT, as above, or to

Box 162, Cobourg, Ontario, Canada.

See *The Iron Age* of Sept. 7, 1876.

WANTED.—A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address,
IRON AND STEEL,
Care of *P. O. Box 813, Bridgeport, Conn.*

Wanted.

An engagement by a thorough and practical Engineer to superintend or construct Machinery, or would fill the position of Engineer and Janitor of public building. Has had over twenty years' experience, and can supply abundant reference as to ability and character.
Address *J. M. MILLER.*
Office of *The Iron Age*, 10 Warren St., N. Y.

WATER POWER
FOR
Rent or Sale.

The Ousatonic Water Co.

Having still unoccupied

WATER POWER & MILL SITES,

Would invite Manufacturers and others wanting power to examine them, having the advantage of permanent and cheap power, and cheap freight, both by rail and water, and easy of access, being within 2½ hours of New York. The location and facilities are unsurpassed. Address

"OUSATONIC WATER CO.,"
BIRMINGHAM, CONN.

NOTICE

To Mining Companies and Manufacturers of Machinery in General.

I possess the facilities for the manufacturing of small Iron and Steel Forgings, and an extensive practical knowledge of the making of the same, and tools and machines for the manufacture of Bridle Bits, Bolts, Turn Buckles, &c., including two Olivers, with a large assortment of Tools; one Bolt-Cutting Machine, will average 3000 bolts per day; one double Nut Tapper and Pointer; one Blower for 8 fires; one hand Cutting Machine; one Screw Press; Anvils, Vises and other Tools, comprising in all the value of $2500.

I thoroughly understand the making of all kinds of small tools and machinery in general. Steel working a specialty. I would place at the disposal of a manufacturer my aforesaid working facilities for work that will steadily employ myself and help, or would contract for the manufacture of small forgings at reasonable rates. *ALFRED HALL,*
P. O. Box 96, Sing Sing, N. Y.

Stove Foundry.

A Stove Foundry for sale, favorably located in the Valley of the Mississippi. Has a good and increasing trade, of many years' standing, and has always done a profitable business. This is an excellent opportunity for an Eastern foundry with spare capital to start a Western branch. For particulars address
STOVE FOUNDRY,
Office of *The Iron Age*, 10 Warren St., N. Y.

DROP FORGINGS.

The TRENTON VISE & TOOL WORKS, Trenton, N. J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings

in quantities to order at reasonable rates.

HERMANN BOKER & CO., Proprietors,
101 & 103 Duane St., N. Y.

NOTICE.

PHILADELPHIA, April 2, 1877.

On and after April 30th the Shipping Agency of **The Pennsylvania Warehousing and Safe Deposit Co.,** at Perth Amboy, New Jersey, will be discontinued.

B. K. JAMISON, Vice President.

Important to Manufacturers.

BISSELL, WELLES & MILLET,
Auctioneers and Commission Merchants, No. 15 Murray St., New York,

Solicit from Manufacturers and others consignments of Hardware and Cutlery for our weekly Auction Sales to the Trade, or at private sale for cash, as desired. Our facilities for moving large lines of goods are unsurpassed. Advances made if desired.

Wanted—A Partner,

In a foundry and machine business, already well established. Locality splendid and healthy.

A practical man with means is wanted to join a practical man who is already well established.
Address *CAR WHEEL FOUNDRY,*
P. O. Box 134, Selma, Alabama

Special Notices.

Klein, Butschke & Co.,

No. 179 Pitt Street, Sydney, AUSTRALIA.

GENERAL MERCHANTS
AND
Commission Agents.

Every Attention Paid to Consignments and Agencies.

References:
BANK OF NEW SOUTH WALES, Sydney.
C. J. KLEIN & BUTSCHKE, Hamburg, Germany

American Manufactures in England.

A merchant of long experience in Birmingham England, will devote time to the sale of, and to the procuring of orders in the English market for American manufactures. For particulars apply to the Office of *The Iron Age*, 10 Warren St., N. Y.

CHARLES OTTO,

P. O. Box - - - 1192.
(ESTABLISHED 1854.)

Importer & Dealer in HARDWARE,

Manufacturers' Agent, etc.

12 & 14 Front and 250 & 252 Market St., } *San Francisco.*

I am prepared to make arrangements with Eastern manufacturers to act as their agent for the sale of Hardware, etc., on the Pacific Coast.

REFERENCES:
Sargent & Co., 37 Chambers Street, New York.
VanWagoner & Williams, 82 Beekman St., N. Y.
T. Hessenbruch & Co., 10 N. 5th St., Philadelphia.
The Pennsylvania Tack Works, Norristown, Pa.
The Pacific Bank, San Francisco.

Wanted, Light T Rail.

Parties having for sale 50 to 100 tons of *slightly worn,* 25 to 35 lbs. T Rail, can find a purchaser at a reasonable price, by addressing (with price delivered in New York or Philadelphia.)

D. G. AMBLER, Utica, N. Y.

W. & A. C. SEMPLE,

(Manufacturers' Agents.)

RAILWAY SUPPLIES, METALS, &c.

44 Third St., LOUISVILLE, KY.

We solicit the business of manufacturers who are desirous of being represented in this market.

Hardware Business.

FOR SALE.—An old stand, facing two streets; rent low; good help, and doing a prosperous business; large back country; the best reasons for selling. Address
G. M. BRUBAKER,
Millersburgh, Dauphin Co., Pa.

Engagement Wanted.

A business man of large experience in manufacturing and trade, accustomed to the management of men and works, desires an engagement in any branch of business or industry. References of the most satisfactory character given.
Address **J. E. G.,**
Office of *The Iron Age*, 10 Warren St., N. Y.

Wanted.

A young man with considerable business experience, active, energetic and of good address, desires a position as sales agent for a line of iron manufacture or other staple goods. Has excellent business habits, and is a hard worker. Acquainted with all manner of office work, and would make himself useful in that capacity when not otherwise employed.
Good references. Address **H.,**
Office of *The Iron Age*, 220 S. 4th St., Philadelphia.

For Sale.

A No. 5 Geared Stiles & Parker Press. Perfect order. Quite new. Latest pattern.
B. D. WASHBURN & CO., Boston.

SPECIAL NOTICE

A new style of
MEN'S SINGLE GUNS,

in addition to the former line of **A. Simon's, Liege,** now offered.

SILESIAN SHEET ZINC,
Imported by
LOUIS WINDMULLER & ROELKER,
90 Reade Street, N. Y.

SPECIAL NOTICE.

I have three patents for Dies, Machinery and Tools for making Augers and Bits, each running seventeen years; dated as follows: Dec. 19, 1865; January 31, 1866, and July 3, 1866. **There is a special claim on each of the dies.** All persons infringing on said patents will be held responsible to the extent of the law. **Russell Jennings.**
DEEP RIVER, Conn., Sept. 7, 1874.

RESIDENT BUYER.—A gentleman of more than twelve years' experience in the general hardware business, and for several years past acting as buyer of the entire stock of one of our large Eastern wholesale houses, will make arrangements to act as buyer for a few Western or Southern correspondents. Thoroughly understands the requirements of both markets, and being constantly in communication with all Eastern manufacturers, offers his services in this behalf. Best of references furnished. Address **G. U. S.,**
P. O. Box 4743, New York City.

Stock of Hardware For Sale by Assignees.

The stock of Hardware at 74 and 76 East Randolph Street, Chicago, belonging to the estate of Messrs. J. L. Wayne & Son, and comprising an excellent assortment of Builders', Cabinet and Undertakers' Hardware, together with Store Furniture and Fixtures, is offered for sale in one lot. The purchaser will secure the opportunity of succeeding to the business of a well and favorably known establishment, thereby making the opportunity one especially worthy of notice.

Proposals will be received and information given by
Assignees of J. L. Wayne & Son.

TO LET,

A Light, Handsome Office.

Possession Immediately.

HERMANN BOKER & CO.,
101 Duane Street, N. Y.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, April 18, 1877.

The past week has been one of considerable excitement in Wall street. The fact that war between Russia and Turkey is imminent, has given a speculative character to most business in the financial markets, and a failure of considerable magnitude in the Stock Exchange has demoralized an important clique and threatened a panic, owing to the forced sale of a large block of Northwest common.

The money market continues easy and well supplied, but owing to the flurry in stocks brokers have had to pay as high as 7 per cent. for loans on call. On other collaterals than stocks the rate on call loans has been about 3 per cent. Mercantile paper is quoted at 3½ @ 5 per cent.

On the strength of foreign advices gold advanced during the week as high as 107⅞. The following table shows the extreme daily range of the premium:

	Highest.	Lowest.
Thursday	106⅛	105⅝
Friday	106⅜	105⅞
Saturday	106⅞	106⅜
Monday	107⅜	107
Tuesday	107⅞	106⅞
Wednesday	106⅞	106⅛

The bond market has sympathized with gold and prices have advanced with the premium, although not in proportion, owing to the decline in the London market. Subscriptions to the new 4½ per cents. have been checked by the unsettled condition of affairs in Europe. We give below the closing quotations of governments. The stock market has been several times in a panicky condition, but recovered its equilibrium in each instance. The principal dealings have been in Northwest, Western Union, Lake Shore, Rock Island, D., L. & W., Delaware & Hudson and St. Paul. We give below the closing quotations of active shares.

The following is a comparison of the bank averages for the past two weeks:

	April 7.	April 14.	Differences.
Loans	$260,196,800	$259,239,700	Dec. $957,100
Specie	21,507,900	19,768,600	Dec. 1,739,300
Legal tend's.	42,257,300	44,267,900	Inc.. 2,010,700
Deposits	218,246,400	219,986,900	Inc.. 1,740,500
Circulation.	15,931,900	15,964,400	Inc.. 32,500

The movements in foreign trade for the week are shown in the accompanying tables:

IMPORTS.

For week ended April 14:

	1875.	1876.	1877.
Total for week.	$6,117,777	$5,063,422	$6,821,338
Prev. reported.	106,876,297	94,614,907	90,764,436
Since Jan, 1	$112,994,074	$99,678,329	$97,585,774

Among the imports of general merchandise were articles valued as follows:

	Quant.	Value.
Anvils	260	2,423
Bismuth	2	794
Brass goods	15	$1,501
Bronzes	11	4,089
Cutlery	72	20,107
Chains and anchors	23	1,098
Copper		24,290
Guns	88	5,930
Iron, pig, tons	300	4,789
Iron cotton, ties	108	638
Iron, sheet, tons	12	1,288
Iron, other tons	432	10,097
Lead, pigs	1,787	9,231
Metal goods	116	7,794
Nails	16	1,420
Needles	13	8,272
Old metal		74
Platina	2	8,520
Plated ware	4	318
Per. caps	17	3,061
Saddlery	15	3,253
Steel	1,593	22,536
Tin, bbls	10	789
Tin, boxes	16,179	76,937
Tin, 940 slabs	55,132	3,510
Wire	45	286
Zinc	78,728	4,978

EXPORTS EXCLUSIVE OF SPECIE.

For week ended April 17:

	1875.	1876.	1877.
For the week	$5,616,840	$5,069,395	$5,598,760
Previously reported	66,752,418	69,395,652	77,507,480
Since Jan. 1	$72,369,258	$74,465,047	$83,106,240

EXPORTS OF SPECIE.

For week ended April 14:

Total for the week	$807,954
Previously reported	3,529,105
Total since Jan. 1, 1877	$4,337,059
Same time in 1876	14,767,063
Same time in 1875	17,665,348
Same time in 1874	9,549,661
Same time in 1873	16,521,501
Same time in 1872	6,610,078

Government bonds close as follows:

	Bid.	Asked.
U. S. Currency 6s.	124½	124½
U. S. 6s 1881. reg.	112¾	112⅞
U. S. 6s. 1881. cou.	113¾	113¾
U. S. 6's. 1865. reg.	106¾	—
U. S. 6's. 1865. cou.	109¾	—
U. S. 6's, 1865, new reg.	109¾	110
U. S. 6's. 1865. con.	109¾	110
U. S. 6's. 1867. reg.	112¾	112¾
U. S. 6's. 1867. cou.	112¾	112¾
U. S. 6's. 1868. reg.	114	114⅛
U. S. 6's. 1868, cou.	114	114⅛
U. S. 10-40 reg	111⅝	111⅞
U. S. 10-40 cou	112	112⅛
U. S. 5s. 1881. reg.	110⅜	110⅝
U. S. 5s, 1881, cou.	111⅝	111⅞
U. S. 4½s. 1891, reg.	108	108⅛

The following are the closing quotations of active shares:

	Bid.	Asked.
Atlantic and Pacific Telegraph	22⅜	22⅝
Chicago & Northwestern	17	17⅛
" " Pref.	42⅛	42¾
Chicago, Rock Island and Pacific	90⅜	90⅝
Chic., Bur. & Quincy	99	100
Col., Chic. & Ind. Cent.	2	2⅛
Clev., Col., Cin. and Indpls.	23¼	23¾
Cleveland and Pittsburgh	86	87
Chicago and Alton	89	90
" " Pref.	104	105
Consolidation Coal	22	25
Canton	16	23
Del., Lack. and Western.	48¾	48⅞
Delaware & Hudson Canal	40¾	40⅝
Adams Express	95	97⅜
American Express	51	52
United States Express	43½	44
Wells, Fargo & Co. Express	83	83½
Erie	6½	6¾
Harlem	137½	140
Hannibal & St. Joseph	8	8½
" " Pref.	18	—
Illinois Central	50¼	50¾
Lake Shore	48⅜	48¾
Michigan Central	41⅜	41¾
Morris & Essex	71⅜	72
Milwaukee & St. Paul	15⅝	16
" Pref.	44	44½
Mariposa	3½	4
" Pref.	4½	5
New York Central	92½	92⅞
New Jersey Central	7⅛	7½
Ohio & Mississippi	4	4⅜
Pacific Mail.	16¾	16⅞
Panama	86	89
Pittsburgh and Fort Wayne	97	98
Quicksilver	13	14
" Pref.	19	20
St. Louis, Kansas City Northern	3	4
" " " Pref	21	22¾
Tol., Wabash & Western	5	6
Union Pacific	65	70
Western Union Telegraph	57⅝	57¾

MINING STOCKS.

Mr. Ogden Haight, No. 65 Wall street, sends us the following report of the business of the New York Mining Stock Exchange for the past week:

COPPER STOCKS.	Bid.	Offered.	Sales. Shares.
Allouez Mining Co	$5·00	$9·00	....
Atlantic "	6·75	7·25	250
Calumet & Hecla Min. Co	184·00	....	....
Central "	34·00	....	....
Franklin "	10·50	11·50	100
Madison "	·20	....	....
Mesnard "	·37½	·62½	....
Minnesota "	....	....	....
National "	·50	1·00	100
Osceola "	24·00	30·00	....
Pewabic "	2·50	....	....
Quincy "	38·00	40·00	....
Ridge "	2·00	4·00	....
Rockland "	....	....	....
GOLD STOCKS.			
Am. Flag G. M. Co., Col	·07	·08	4,900
Bobtail " "	1·45	1·55	2,200
Lacrosse " "	·36	·37	9,500
N. Y. & Col. "	1·00	2·50	....
Seaton Consolidated	3·12½	3·50	100
Alpha, Nev. Gold & Silver	9·00	12·00	....
Belcher "	5·50	7·00	....
Best & Belcher "	18·00	....	....
Caledonia "	4·00	6·00	....
California "	36·00	40·00	....
Consol'd Imperial "	1·00	1·50	....
Consol'd Virginia "	32·00	35·00	....
Crown Point "	7·00	9·00	....
Eureka of G. V. "	2·50	3·50	....
Exchequer "	3·00	5·00	....
Gould & Curry "	7·00	....	....
Hale & Norcross "	2·00	3·50	....
Julia "	1·00	....	....
Justice "	8·00	10·00	50
Kentuck "	4·00	6·00	....
Mexican "	8·00	....	....
Overman "	15·00	....	....
Ophir "	15·00	17·00	....
Raymond & Ely "	4·00	5·00	....
Savage "	....	....	....
Segd. Belcher "	25·00	....	....
Sierra Nevada "	3·00	5·00	....
Silver Hill "	....	....	....
Union Con. "	....	....	....
Yellow Jacket "	8·00	....	....
LEAD STOCKS.			
St. Joseph Lead Co	5·50	7·00	....
SILVER STOCKS.			
Silver Islet Mining Co	·50	....	....
TUNNEL COMPANIES.			
Bobtail Tunnel	3·50	4·00	....
MISCELLANEOUS STOCKS.			
Smith & Parmelee	·10	·14	....
Hukill of Colorado	3·50	4·00	....

GENERAL HARDWARE.

During the week a great many goods have changed hands, and notwithstanding the fact that our market possesses its full quota of croakers, who always see through a glass darkly, evidences are not wanting to disprove the frequent assertion that "business is dreadfully dull." Many of our city houses are fairly employed, and we hear of some manufacturing establishments finding it a difficult matter to keep up with the requirements of their customers.

The Lalance & Grosjean Mfg. Co. have been, as our readers are aware, considerably exercised over the newspaper paragraphs that have recently appeared condemning the use of Marbleized Ware, and stating that it contained lead poison which was soluble in acids. They have always had the fullest confidence in the ware, and have used it freely in their own houses. Since the matter has been brought under their notice, they have employed several eminent chemists to prepare the most exhaustive analysis of the enamel, and the result has been, greatly to their surprise and regret, that traces of lead have been discovered, and is accounted for only from the fact that the flint glass which they have used contains this mineral; but whether it is soluble, is a question that has not been satisfactorily determined. Enough, however, is known to decide the manufacturers on their future course, and they have now in their warehouse some very beautiful samples of Mottled Enameled Ware, in the manufacture of which flint glass does not enter. The new ware will be guaranteed to be absolutely pure and free from anything injurious. It will be stamped "Absolute Safety Guaranteed," together with their well known trade-mark, and will be indorsed by the same chemists whose analysis of the old ware has caused its discontinuance.

The Northfield Knife Co. have sent us the following communication:

NORTHFIELD, CONN., April 17, 1877.

Editor of The Iron Age—DEAR SIR: We desire a correction of the report widely circulated by your valuable paper, as well as others, that the Cutlery Works here have been destroyed by fire, as such is not the case, and said report, as published in various ways by different papers (either with or without using the name of our company), being likely to mislead, and having already caused us to be flooded with inquiries from all parts of the country, we desire to say to our friends and the trade generally that we are not burned out, and that with the extensive addition now making to our works, we will be in a still better position than ever to execute their orders promptly.

The error appears to have started from careless reporting in regard to the destruction by fire of similar works of our neighbors in an adjoining town. Yours, truly,

NORTHFIELD KNIFE CO.,
F. H. CATLIN, President.

The demand for Nails during the week has been more active than at our last writing, but nothwithstanding the unsettled condition of the market and the very low price at which orders for prompt delivery can be placed, we hear of no speculative inquiry whatever. In the matter of price the market is a weak one, and we quote 10d. to 60d., nominally, $2 60. Buyers of round lots would have little difficulty in shading this figure.

George E. Weaver, Providence, R. I., has issued, under date of 1st inst., the following price list for the Harris Patent Enameled Picture and Shutter Knobs. These goods are furnished in a variety of colors and in imitation of rosewood and tortoise shell. Samples which we have seen are handsomely finished. We take pleasure in commending this new line of Knobs to the trade, and bespeak for them a favorable reception, as they seem to fill a want hitherto unsupplied. The list is subject to discount 50 per cent. Mr. Weaver informs us that he is prepared to enamel on wood or iron in colors to order:

The Harris Patent Enameled Picture and Shutter Knobs.

Color.	Price List.		
Jet,	Nos.	101	102	103
	Per Gross	$3·50	4·00	4·50
Shell,	Nos.	201	202	203
	Per Gross	$3·50	4·00	4·50
Rosewood,	Nos.	301	302	303
	Per Gross	$3·50	4·00	4·50
Green,	Nos.	401	402	403
	Per Gross	$4·00	4·50	5·00
Drab,	Nos.	501	502	503
	Per Gross	$4·00	4·50	5·00
Scarlet,	Nos.	601	602	603
	Per Gross	$4·50	5·00	5·50
Blue,	Nos.	701	702	703
	Per Gross	$4·50	5·00	5·50
Red,	Nos.	801	802	803
	Per Gross	$4·50	5·00	5·50
Agate Red,	Nos.	901	902	903
	Per Gross	$4·80	5·30	5·80
Agate Blue,	Nos.	1001	1002	1003
	Per Gross	$4·80	5·30	5·80

Enameled and Ornamented Shutter Knobs.

Price List with Fast Screw.

No. 20, Plain Jet.

Inch	⅝	¾	1	1⅛	1¼	1⅜	1½	2
Per gro.	$3·60	3·60	4·40	5·00	5·60	6·50	7·25	8·25

No. 30, Imitation Tortoise Shell.

Inch	⅝	¾	1	1⅛	1¼	1⅜	1½	2
Per gro.	$5·00	5·00	5·75	6·25	7·00	7·50	8·75	9·75

No. 40, Jet Ornamented with Leaf.

Inch	⅝	¾	1	1⅛	1¼	1⅜	1½	2
Per gro.	$5·75	5·75	6·50	7·00	7·50	8·50	9·50	10·50

J. Curley & Brothers, Nos. 134 and 136 Nassau street, have issued, under date of 2d inst., the following reduced price list of Chesterman's Steel and Metallic Measuring Tapes. The figures quoted are all net gold prices:

No. 36SS—Steel Tapes.

German Silver Case with spring stop, divided in 16ths to the inch, or 16ths on one side and meters on the other.

Per doz.—gold.		Per doz—gold.	
3 feet	$12·00	9 feet	$22·80
5 "	15·00	12 "	28·20
6 "	17·40		

No. 37—Steel Tapes.

German Silver Case, wind up flush handle.

Each—net gold.		Each—net gold.	
10 feet	$2·40	15 feet	$3·30
12 "	2·55	20 "	4·50

No. 38L—Steel Tapes.

Leather Case, flush handle, divided either in 10ths or 12ths.

Each—net gold.		Each—net gold.	
24 feet	$3·30	50 feet	$5·40
25 "	3·40	66 "	6·90
33 "	3·90	75 "	7·80
40 "	4·50	100 "	9·60

No. 34L—Metallic or Wire Woven Tapes.

In Leather Case, divided either in 10ths or 12ths.

Each—net gold.		Each—net gold.	
24 feet	$1·28	50 feet	$1·85
25 "	1·31	66 "	2·10
33 "	1·50	75 "	2·37
40 "	1·65	100 "	2·94

Metallic Tapes.

Without Case—Tapes same as No. 34L.

Each—net gold.		Each—net gold.	
25 feet	$0·60	66 feet	$1·20
33 "	·75	75 "	1·35
40 "	·90	100 "	1·95
50 "	1·03		

Steel Pocket Folding Rules.

Per doz—net gold.		Per doz—net gold.	
No. 57, 1 foot	$1·63	No. 57, 3 ft.	$4·88
No. 57, 2 "	3·25	No. 58, 2 ft., sing. j't.	4·88

Chesterman's Steel Rules—Machine Divided.

Per Dozen—Net Gold.

	4 Inch.	6 Inch.	12 Inch.
No. 300	$3·20	3·50	4·80
No. 302	....	....	3·84
No. 304	2·60	2·92	3·80
No. 310	....	....	6·40
No. 326	....	....	...

The manufacturers of Cordage issued the following revised price list under date of 13th instant. It will be observed that Manila Cordage has been reduced half a cent per pound; the balance of the list is unchanged. We print the revised prices below, which are subject to the usual trade discount:

PRICES OF CORDAGE, APRIL 13, 1877.

Manila Cordage, sizes above 12 th'd and Hay Rope	14 cts.
Manila Cordage, 12 th'd (⅜ in. diam)	14½ "
" " 6 th'd and 9 th'd (¼ in. and 5-16 in. diam)	15 "
" Cordage, bolt rope yarns	15½ "
" " " " 6 th'd and 9 th'd	16½ "
Manila Whale Lines	16 "
Tar'd Manila	13½ "
Fine Tar'd Manila Lath Yarn	15 "
Sisal Rope, sizes above 12 th'd & Hay Rope	11 "
" 12 th'd	11½ "
" 6 th'd and 9 th'd	13 "
Tar'd Sisal Lath Yarn	10½ "
Russia Hemp Tar'd Cordage	13 "
American Hackled Hemp Tar'd Cordage	12 "
Tar'd American Lath Yarn	12 "
Fine Tar'd " "	13½ "

Lane Brothers, Millbrook, N. Y., have issued a circular to the trade, under date of 4th inst., announcing that they have appointed Graham & Haines, No. 113 Chambers street, agents for the sale of their manufactures. They manufacture 30 different styles and sizes of the "Swift" Mill for coffee, spice, &c., and will keep a full line of these goods at the warehouse of their agents above mentioned. Orders will be filled either from store or factory at the manufacturers' best terms.

Graham & Haines have also added to their specialties a very handsome line of Sieves, which will be known to the trade as Ketcham's Metallic Sieves. They claim for this Sieve that it is the strongest and best made flour or meal Sieve in the market. The body is constructed of a single piece of tin, thus avoiding seams. They offer these goods at the following list, which is subject to discount 25 per cent. In lots of 25 dozen and over, an extra discount will be allowed:

Ketcham's Metallic Sieves.

	Doz.		Doz.
No. 14 Mesh, Iron.	$4·00	No. 14 Mesh, Plated.	$4·75
No. 16 Mesh, Iron.	4·00	No. 16 Mesh, Plated.	4·75
No. 18 Mesh, Iron.	4·25	No. 18 Mesh, Plated.	5·25

The Saddlery Hardware Manufacturers held a meeting recently in this city, at which a large representation of makers of Buckles and other Saddlery Hardware were present. A revised price list and discount were adopted, and will be issued, it is expected, immediately.

E. E. Yates & Co., Agents for the Reading Butt Works, illustrate in their advertisement on page 33, the Turn Table Apple Parer, which they quote for the season of 1877 at $5 per dozen net, to regular trade.

The Turner Manufacturing Company, 26 Central street, Boston, illustrate in their advertisement on the third page a novel device for catching fish or game, which they style the "Eagle Claw of '76." They claim for this article the following advantages: "It is easy to set; suited to any bait; can be used anywhere; nothing can escape until released. This is done without soiling the hands. Every fish, eel, crab, turtle, musk-rat or squirrel which bites at the bait is certainly caught. Perfectly safe for children; will not rust; one bait will catch from 20 to 30 fish; will spring in any position."

The many improvements which American manufacturers of Hardware have introduced over the old-fashioned methods of packing goods, are commended as examples worthy of imitation by English manufacturers in the following article, from the *Ironmonger* of the 1st instant:

We are afraid that the manufacturers of Hardwares in England are not sufficiently sensible of the importance of carefully and neatly packing the goods which they send abroad; and we are disposed to conclude that not a little of the preference which is now and again being shown for American over British Hardwares is traceable to the superior packing usual with our American competitors. For example, the common method of exporting locks and the like from this country to the Antipodes is to send them out in parcels inclosed in casks. The Americans, however, having nicely wrapped the locks in separate paper covers, put them into a neat box, which a storekeeper can place in a handy position, and, when a lock is called for, has nothing to do but lift the lid of the box, take out the lock, which within its neat wrapping contains the requisite keys, and hand it over to the customer, no more wrapping being necessary. The question of packing, even in the phase of mere neatness, is of more importance than some of our traders are disposed to believe. But there is a phase of the packing question of more serious moment than that of which we have just spoken. Operative packers must be subjected to more supervision than that to which they have now as a rule to submit if they are to be prevented from doing their employers much damage. Hardware merchants inform us that there is now less conscientiousness in the manner in which orders are made up than at one time prevailed. The modern assumptions of the working classes, as a body, have something to do with this. Still, whatever be the cause, the fact remains as we have stated, and the effect is very prejudicial to the extension of our business in Hardwares with conspicuous foreign markets.

Since the date of our last publication complaints of unconscientious packing have reached prominent exporting merchants of British Hardwares in greater numbers than have perhaps been ever before received in the same interval. Take the following, touching the packing of certain hand sewing machines: The boxes, in the first place, are declared too small, which has necessitated the separation and consequent chafing and disfigurement of the slabs against the sides of the machines. The boxes, moreover, are filled with shavings and sawdust, which latter penetrates the oiled parts and clogs the machines, so that they have to be taken to pieces and thoroughly cleaned before use. Some of the machines are declared to be "rubbish," the workmanship and fittings together being equally disgraceful. No such complaints are received of the quality or packing of the American machines. Again, with reference to consignments of chains, a Melbourne house writes: "The trace chains are all short weight. We happened to have a claim made upon us for a cask 19 lbs. short. We then weighed five others, and found they were from 19 lbs. to 28 lbs. short, the average deficit being 1 cwt., equivalent to 26/6, bonded, duly paid, in Melbourne." We furnish another instance. One of our leading Australian merchants writes as follows: "I am really ashamed to send out many of the goods which come into this warehouse. They are so bad as hardly to be worth the packing. Unless the master personally inspects every article the men will scamp it. I lately had a quantity of large gun nipples—'twelve gross Enfield'—at 10/6 per gross. Hardly a parcel contained a gross. They were done up nominally in one gross parcels; I found about eleven dozen in each; and very many of the nipples were solid (had not even been bored out), so, as you may imagine, were utterly worthless. I cannot say too much about the miserable state to which we have fallen. My only hope is, now trade is so bad, that masters and men may see it to their interest to make a stand against our American competitors."

We are indisposed to lay all the blame for this very humiliating state of things at the door of the English manufacturer. It cannot be denied that he does not rate highly enough the taste and the value of some of his foreign customers; but they, like himself, desire to make as much by their trading as the consumer will permit. Not unfrequently the foreign customer is greedy of gain. He has made up his mind to sell at a certain price an article which he knows he can, upon the application of pressure in England, secure at a figure which will leave him the splendid margin he desires, and upon those bases he constructs his order. The result is, he gets an article which does credit to no one. On the contrary, it brings both maker and storekeeper into disrepute. We are afraid that too many middlemen, when the complaints, reach them, lay the blame upon the manufacturer, whereas in truth it belongs more to themselves than to anybody else. It is a fact that to the order of an Australian trader a number of sewing machines have been made in Birmingham at prices limited by the trader to 36/ per machine as maximum, yet these machines were to sell in Australia at four guineas each. If these were the machines to which the foregoing complaint refers, the blame should lie with some one else than the manufacturer. This assumed, there nevertheless remains plenty of room for the English Hardware exporters to take a leaf out of the book of the American trader in reference to the handy packing of Hardwares, and certainly abundant room for an increase of watchfulness in the making up of orders and the subsequent packing of the goods, so as to prevent the deterioration which bad packing ocasions.

BRITISH IRON MARKET.

(*Specially reported by cable for The Iron Age.*)

WEDNESDAY, April 18, 1877.

Scotch Pig.—Since last report prices have fluctuated in both directions, but the market is now steady, and there is a fair amount of business doing. The following are makers' quotations:

Coltness No. 1	65/
Glengarnock No. 1	59/
Eglinton No. 1	56/6

Manufactured Iron.—There is but little doing and prices are nominal.

Rails are unchanged. Heavy failures are expected.

IRON.

American Pig.—The condition of the Iron market continues dull and depressed, although a good many small lots are constantly going into consumption. It is a feature of the business doing at present that nearly every order that is placed is required for immediate delivery, showing that consumers are still holding to the hand-to-mouth policy, or else have no faith in the stability of prices. The only sale of magnitude that we hear of since our last review of the market, is 2800 tons No. 2 X Thomas on private terms. The small parcels referred to above aggregate a considerable amount, and as far as we can learn, full prices have been obtained. We quote: Foundry No. 1, $19 @ $20; Foundry No. 2, $18 @ $18 50; and Gray Forge, $18.

Scotch Pig.—The demand for Scotch Iron seems to grow "small by degrees and beautifully less." We hear of no transactions worth reporting, and continue to quote Glengarnock, $25 @ $26; Eglinton, $24 75 @ $25, and Coltness, $27 25.

Rails.—A sale is reported of 4000 tons Steel Rails on private terms. We quote Steel, $49 @ $50, and Iron, $35 @ $38 at mill.

Old Rails.—Business in Old Rails is quiet, and in the absence of transactions we quote at unchanged figures, viz.: $19 @ $20 nominally.

Scrap.—There is nothing to report. We quote, on a dull market: Wrought, from yard, $25 @ $26.

METALS.

Copper.—For about a month past the manufacturers of Brass goods have enjoyed a gradually increasing demand, and although the prices they obtain may not be quite as satisfactory as they would wish them to be, they are being relieved of surplus stock, and are looking around for the raw material. A more active inquiry for Copper is thus noticeable. Sales for the week sum up 500,000 lbs. Lake Superior, commencing at 19¼c. and closing at 19½c., which latter figure is now obtainable without difficulty, while Baltimore is worth nominally as much, and futures all the way into August would command 20c. Much will now depend on the export demand. We can spare the Europeans some 6,000,000 lbs. more Copper, beside what has been contracted for that part of the world since January 1st, without encroaching upon the quantity we shall want ourselves at the present rate of consumption, and there is every prospect that they will take that much more if the Eastern question is to be solved at the cannon's mouth, for, in the latter event, there is no saying to what complications the strife, once commenced, may lead. But even without indulging in suppositions on that score, Copper was seldom in a better position here, both statistically and in point of price, as we have tried to prove over and over again since mid-winter, than at the present moment, when it will take some five weeks still ere the new Copper can reach us, while the available supply has run unprecedentedly low. It is different in Europe, especially as regards Chili Bars. They are beset with troubles and disappointments of all sorts, and in political matters perhaps stand on the brink of a precipice. Yet, without Copper fit for cartridges they cannot do. The latest cablegram from London quotes Chili Bars again £1 lower, £70, while Best Selected has been upheld at £78. The 600 tons Wallaroo sold at auction at £76. 4/, including 2612 tons Australian, advised by mail as being afloat, and 3200 tons Chili also afloat, but advised by cable, there was a visible supply of Copper in England and France on the 1st instant of 44,459 tons. There is a fair inquiry for manufactures, which we quote 31c. for Sheathing and 32c. for Bolts and Braziers; New Yellow Metal Sheathing, 20c.; Yellow Metal Bolts, 25c., and Nails, 20c., net cash.

Tin.—Both the London and Singapore markets are steadily drooping, Straits now having got on the wrong side of £70, coming £69. 5/, and Singapore also having given way to $20·25 per picul. From whatever side we may study the Tin situation it presents elements of weakness. The visible supply in England and Holland, which a year ago was 14,762 tons, and the previous year 14,306, is now 17,260, against 17,386 March 1. The actual shipments from Australia to London during the 12 months ending March 31 had been 6989 tons; in other words, from that source alone London receives Tin at the rate of nearly 600 tons a month. No wonder, then, if the London stock of all kinds is 8995 tons, against 6725 in 1876 and 5079 in 1875. On the 9th inst. 10,000 piculs Billiton sold at Batavia at 46·22 guilders per picul. Present prices being untenable from statistical considerations, essentially weak because production steadily outruns consumption, and prospectively in a precarious position in view of the threatened money disturbance through war, there would be but one element that could temporarily stay a further decline, which would be a sudden and material curtailment of production in some important quarter, for a powerful speculation for a rise under present circumstances cannot be expected. There is very little doing here, and the decline at London below £70 has unsettled the market. We quote Straits to arrive and spot, large lots, 16¼ @ 16¾c., gold: English Refined, 16⅜ @ 16½c.; ditto Common, 16c. @ 16⅛c., and Banca, 18½c. @ 19c., all gold. The demand for *Tin Plates* continues fair, and we quote in gold, per box, ordinary brands, large lines. Charcoal Bright, $6·62½ @ $6·75; ditto Ternes, $6; Coke Tin, $5·87½, and ditto Ternes, $5·37½ @ $5·50.

Lead.—Sales have amounted for the week to about 200 tons Common Domestic at prices not all transpired, but a portion known to have gone at 6·30c., currency. There is but a restricted demand on this coast, and this applies

equally as much to fine Lead. The Western markets have naturally not been able to escape the effect of the demoralizing state of affairs here, and are now also decidedly lower, fine Lead freely offering at 6¼c., currency, and Common at 6c., do., at St. Louis' from whence the freight to New York is 45c. Foreign is still nominally quoted 6⅝c., gold, but according to the latest mail quotations it can be laid down here at 6⅝c., gold. The decline at London during the week ending April 7 was 2/6 @ 5/ per ton. Manufactures of Lead are in tolerably good request. Bar at 7⅝c., Pipe at 9c., and Sheet at 9¼c., less the usual discount.

Spelter and Zinc.—Of common Domestic Spelter some lots have been forced on the market at 6¼c., currency, to be delivered here at this figure, while the better brands remain in steady request at 6⅝c. @ 6¾c., currency. Of Foreign we have no stock here, nor is there any afloat; we quote the same, nominally, 6⅝c. @ 6¾c., gold. London has at length steadied. *Sheet Zinc.*—The market is as yet without much movement here at 8c. @ 8¼c., gold. Mossel-mann, and 7⅜c. @ 7¼c., currency, Domestic.

Nickel.—Nothing new has happened in this metal, which we quote as heretofore, $1·85 @ $2, gold, per pound.

Antimony.—Little activity can be reported in this metal, which we quote 12¼c. @ 12¾c., gold. London is £51 @ £52, according to brand.

COAL.

The Coal trade shows considerable activity, especially in the larger sizes. Much of the Coal sold goes to manufacturers, who are taking advantage of the low prices and coming into the market freely. They do not seem, however, to be putting in very heavy stocks. In the smaller sizes, Stove and Chestnut, there is very little doing, and prices are correspondingly low, much below the quotations, in fact. Prices do not seem quite as firm as last week, and we hear of concessions being made almost constantly, especially in Stove and Chestnut. The market presents the curious feature of a combination which is to raise the price of Coal and restrict production, and at the same time a decline in prices. There are rumors that some of the companies intend to increase their prices in the next circular, and hope to force the price up, while it is said, on the other hand, that some companies are making season contracts at very low figures. The market is, to say the least, in a very safe state for the buyer.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending April 17, 1877:

	Quan.	Value.
Cronstadt.		
Brass, cks....	1000	$86,650
Mach'y, case..	1	255
G'powder, cs.	6042	96,500
Cartridges, cs.	4700	143,100
Christiana.		
W'dmills, bxs.	4	135
Ag. imp., pgs.	1167	33,541
Wringers, cs..	12	385
Hdw., pkgs. ..	1	50
Danish West Indies.		
Muskets, cs....	50	2,450
Lead, pigs....	75	525
Powder, kegs.	200	1,089
Rifles, cs.....	9	1,635
Cartridges, cs.	167	3,440
Per. caps, case	1	170
Hamburg.		
Clocks, bxs...	158	2,312
Revolvers, cs..	130	98,000
Sew. mach., cs	557	16,450
Pumps, pkgs..	12	1,500
Ag. imp., pkgs	25	1,739
Pi'd ware, box	1	275
Copper, bxs...	54	5,700
Machinery, cs.	30	3,532
Hdw., pkgs....	82	2,840
Spelter, slabs.	3425	9,241
Bremen.		
Mach'y, bxs...	13	2,242
S'dpaper, bdls.	30	230
Cop. mtls., bgs	206	1,200
Ag. imp., pkgs	967	22,984
Chimes, cs....	4	288
Mf. iron, pkgs.	11	345
Pumps, pgks..	9	500
C'r'ge mtls, pk	12	216
Antwerp.		
Pi'd ware, bx.	1	198
Rotterdam.		
Machinery, cs.	5	734
Hardware, cs..	6	355
Ag. imp., pkgs	304	9,152
Sew. mach., cs	4	400
Dutch West Indies.		
Hdw., pkgs...	7	87
Ag. imp., pkgs	24	90
Sew.mach.,bxs	12	105
Mach'y, pkgs..	10	532
Lamps, pkgs..	6	88
London.		
Castings.....	168	2,278
Clocks, bxs...	399	5,791
Liverpool.		
Sew. mach., cs	12	501
G'dstones, pgs	7	75
Cutlery, cs....	1	250
Mf. iron, pkgs.	2	255
Lamp g'de,pgs	41	1,670
Pumps, hhds..	1	200
Wringers, bxs.	18	680
Ag. imp., pkgs	511	13,489
Metals, bxs...	1	150
Hubs & sp'kes, cs.....	87	2,988
Hardware, cs..	125	5,300
Car'ge mtl. pgs	82	1,181
Oilstone, bxs.	56	204
Bells, cs	10	304
Clocks, bxs...	302	6,075
Hull.		
Hdw., pkgs...	53	988
Sew. mach., cs	30	1,040
Mach'y, pkgs..	28	2,600
Clocks, bxs....	84	1,303
Ag. imp., pkgs	414	8,604
Cars	2	2,242
Glasgow.		
Irons, cs.....	17	204
Clocks, bxs...	238	3,800
Iron r. ils, cs...	3	210
R R. cars, pgs.	7	2,146
Ag. imp., pkgs	8	408
British North American Colonies.		
Hardware, cs..	78	929
Tel. mtls., pgs	36	1,000
Nail plate, pcs	592	293
Mf. iron, pkgs.	45	305
British West Indies.		
Hdw., pkgs....	94	437
Ag. imp., pkgs	13	106
Nails, kegs....	117	403
Tinware, pkgs	6	89
Iron, pkgs.....	95	1,223
Lamps, pkgs..	9	165
Car'ge mtl. pgs	23	305
British Australia.		
Hdw., pkgs....	661	$14,343
Cars	13	29,000
Sew. mach., cs	36	1,343
Cutlery, pkgs.	265	3,100
Ag. imp., pkgs	126	6,089
Mf. iron, pkgs.	18	670
Wheels, pkgs.	6	136
Car'ge mtl. pgs	199	2,042
Clocks, cs.....	46	750
Pumps, pkgs .	14	920
British Possessions in Africa.		
Ag. imp., pkgs	57	1,641
Nails, kegs....	190	675
Santander.		
Pumps, pkgs..	6	194
Cuba.		
Steel, cs.....	5	1,705
Nails, kegs....	116	704
Hdw., pkgs....	135	3,453
Clocks, pkgs..	6	173
Ag. imp, pkgs.	10	744
Iron, bars.....	219	189
Sew. mach.,cs.	177	5,832
Windmills....	7	1,980
Mf. iron, pkgs.	27	282
Wire, bdls....	167	2,280
Porto Rico.		
Coal, tons.....	275	797
Hardware, bxs	22	908
Car'ge mtl, pgs	8	109
Sew. mach., cs	13	679
Guns, cs.....	5	5,826
Machinery, cs.	2	90
Nails, kegs ...	40	122
Lamps, pkgs..	2	70
Ptg. mtls., pgs	21	617
Ag. imp., cs...	17	472
Mf. iron, pkgs.	6	181
Constantinople.		
Arms, cs.....	550	150,000
Naples.		
Hardware, cs..	2	50
Hayti.		
Hdw., pkgs.. .	40	846
Iron pipes ..	25	160
Mf. iron, pkgs	141	814
Machinery, cs.	3	95
Wagon.....	1	100
Cutlery, bxs..	3	78
Rifles, cs.....	36	7,500
Nails, kegs....	74	236
Per. caps, case	1	150
Mexico.		
Sew. mach.,cs.	184	6,334
Cartridges, cs.	10	542
Tacks, bxs....	15	201
Mf. iron, pkgs.	31	245
Hardware, cs..	390	8,940
Pumps, cs.....	18	365
Nails, kegs....	816	2,348
Tin, bxs.	25	200
Cutlery, bxs..	34	2,113
Revolvers, case	1	124
Clocks, cs.....	25	499
Lamps, pkgs..	6	475
Ag. imp., pkgs	17	513
Carriages.....	4	454
United States of Columbia.		
Sew. mach., cs	6	168
Cutlery, pkgs.	25	709
Venezuela.		
Clocks, cs.....	5	142
Cutlery, case..	1	88
Nails, bxs. ...	13	217
Nails, kegs. ..	12	44
Machinery, cs.	8	92
Hardware, cs.	68	683
Sew. mach., cs	61	1,865
Mach'y, pkgs.	7	279
Cartridges, cs.	2	526
Lamps, pkgs..	6	67
Argentine Republic.		
Ag. imp., pkgs	382	5,241
Hdw., pkgs...	255	7,340
Lamps, pkgs..	7	245
Sabers, case..	1	100
Tinware, cs...	23	325
Irons, pkgs...	49	1,129
Mach'y, case..	1	300
Ciaplatine Republic.		
Hdw., pkgs ..	22	282
Car wheels ...	128	820
Ag. imp., pkgs	68	940
Car mtls., cs..	2	350

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending April 17, 1877:

Hardware.

Boker Hermann & Co.
Steelware, cs., 15
Mdse. pkgs., 8
Broch & Koch,
Steelware, cs., 5
Brown William,
Scales, cs., 1
Curley J. & Bros.
Mdse. pkgs., 1
Degraw, Hymar & Co.
Chains, cks., 9
Chains, lengths, 5
Ely & Wray,
Cases, 1
Frasse P. A. & Co.
Files, cs., 4
Friedmann & Lauterjung,
Mdse., pkgs., 6
Hale J. M.
Nails, bags, 235
Laughland & Co.
Wire, bales, 114
Wire, cks., 3
Wire, rolls, 38
McCoy & Co.
Mdse., pkgs., 3
Merchants' Dispatch Co.
Guns, cs., 8
Markt & Co.
Mdse. pkgs., 47
Schoverling & Daly,
Mdse., pkgs., 4
Sellgos Abraham,
Cutlery, cs., 2
Twaits & De Planque,
Casks, 14
Wiebusch & Hilger Hdw. Co.,
Hdw. and Cutlery, pkgs., 5
Witte J. G. & Bro.
Ironware, cs., 41
Order,
Cask, 1
Cases, 7
Chain, cks., 5
Anvils, 2

Iron.

Alexandre F. & Sons,
Bundles, 150
Bars, 18
Brockner & Evans,
Bundle, 1
Corbin P. & F.
Pig, tons, 50
Hopkins E. T.
Bars, 890
Bundles, 391
Marvel W. D.
Ore, tons, 200
Mitander Nils
Bars, 2069
Sampson G. G.
Pig, tons, 100
Winn & Holland,
Pig, tons, 200
Order,
Pig, lots, 1
Spiegel, lots, 1

Steel.

Alexandre F. & Sons,
Boxes, 30
Brown William,
Bundles, 127
Cases, 9
Berbucker J. & Co.
Cases, 4
Dolge Alfred,
Wire, cs., 5
Mitander Nils,
Bessemer, blooms, 420
Moore Henry,
Cases, 2
Prosser Thomas & Co.
Tire forgings, pkgs., 48
Saxton & Seabury,
Cases, 21
Woodford W. O.
Cases, 19
Order,
Bundles, 932
Bars, 1
Packages, 17
Casks, 8

Metals.

Bruce & Cook,
Terne plates, bxs., 500
Tin plates, bxs., 634
Antimony, cks., 15
Tin plates, 150
Cort N. L. & Co.
Tin plates, bxs., 600
Frazer J.
Tin, pigs, 460
Tin, slabs, 1082
Haxtine B.
Bars, 3303
Hopkins E. T.
Tin, slabs, 250
Tin plates, bxs., 317
Meyer M.
Bars, 3136
Naylor & Co.
Tin plates, bxs., 3625
Phelps, Dodge & Co.
Tin plates, bxs., 10,971
Tin, slabs, 500
Schmidt O. E.
Lead, pigs, 2330
Order,
Tin, slabs, 120
Tin plates, bxs., 461
Black taggers, bxs., 50
Lead, pigs, 7761
Antimony, cks., 32
Without bills of Lading,
Tin, slabs, 739
Tin plates, bxs., 2053
Tin, ingots, 486
Lead, pigs, 400

OLD METALS, PAPER STOCK, &c.

The Old Metal market is laboring under a season of dullness, and no heavy transactions have occurred since our last report. There is, however, a better feeling in connection with Lead, and quotations are more easily obtained. The Rag and Paper Stock markets are very dull and prices have somewhat declined. Consumers are diffident about purchasing, and only present wants are considered. We quote the following as the current purchasing rates:

Old Metals.—Copper, 14c. @ 15c. per lb.; Yellow Metal, 10c.; Brass, 9c.; Composition, heavy, 12c. @ 13c.; Lead, solid, 4½c. @ 5c.; Tea Lead, 4c.; Zinc, 4c.; Pewter, No. 1, 18c.; do., No. 2, 8c.; Spelter, 5¾c., Wrought Iron, $20 per ton; Light do., $10 per ton; Stove Plate, $9 per ton; Machinery, do., $12 per ton; Burnt Iron, $4 per ton.

Rags, &c.—Canvas, Linen, 4⅝c. @ 5¼c.; do. Cotton, No 1, 5½c.; No. 2, 2¾c.; White, No. 1, 4¾c.; No. 2, 3½c.; Colored, do., 2c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5¼c. @ 6c.; Gunny Bagging, 1¾c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3½c.; Newspaper Stock, 2½c.; Waste Paper and Scraps, 1¾c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4¼ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1¾c.; Grass Rope, 3c. @ 3¾c.

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, April 17, 1877.

The general condition of business is not up to the anticipations of a few weeks ago, and the Iron trade especially is very disappointing. Among the favorable features we have to note continued activity in all the shipyards, which, without exception, seem to be full of work. There is also a decided improvement in the demand for railway equipments, as an evidence of which the Baldwin Locomotive Works have this week placed their hands on full time. The car wheel works are also said to be doing more than for a long time past, and the Standard Steel Company, which makes a specialty of Steel tires, report quite an active demand. An order for 1000 freight cars has also been given out for the Pennsylvania Railway Company, and the outlook is quite favorable in the branches connected with the railway interests. The brass founders also report some improvement in their business, which has suffered severely for a long time past. The building trade, too, seems to have taken a new start, and there is considerable activity in every direction. This, however, is a local and speculative matter, and is certainly not to meet a want, as there are enough vacant houses already to make a good sized city, but it shows capitalists have perfect confidence in the future of Philadelphia. The Hardware jobbing trade is variously reported—some busy, some dull—but on an average the trade will no doubt compare favorably with other branches. The promise of an abundant harvest, and with the high prices and active foreign demand for all our cereals and provisions, must add enormously to the wealth of the country, and aid a speedy return to general prosperity.

Pig Iron.—The dullness and monotony of the past few weeks still continue, and there appears to be nothing whatever to indicate any immediate improvement. The demand is of a very limited character, the larger consumers having bought some weeks ago, believing prices could not go lower. The feeling is now, therefore, one of weakness and depression, and no buyers can be found for round lots unless at a large reduction from nominal quotations. This weakness and lack of confidence is kept alive by the fact of outside lots being placed on the market for immediate cash, and as we remarked last week no sooner is one lot out of the way than another takes its place. Buyers, therefore, expect to place their orders on better terms at every purchase, while sellers, as a rule, are eager to keep their trade together on any terms. Special brands are still held with a comparative degree of firmness, but no large lots could be placed without breaking prices. Forge Irons are not plentiful, and are salable at more uniform prices than other descriptions. We quote as average prices: No. 1 Foundry, $19·50; No. 2 do., $18, and Gray Forge, $17 50. Special brands are held at 50c. to $1 more money, while in some cases outside lots, unknown brands, and lots pressed for immediate sale, are sold at about a corresponding reduction. We note small sales of Eglinton (Scotch Iron) at $26. The lot of Chickies Iron reported as sold last week was at $18, $19 and $20, at furnace. As the quotation has been misunderstood we make this correction.

Ores.—Business is quiet and without change in prices. We quote: Lake Champlain—Selected Lump Ore, $4 f. o. b.; Furnace Ore, $3·25, f. o. b. New Jersey Magnetics—Blue Bessemer Select (Broken), $2·75, cash, f. o. b. Hackiebarney "Hoff"; for Foundry Metal, $3·75 to $4, f. o. b. Port Oram; Magnetic Lancaster Ore, suitable for Anthracite or Bessemer purposes, $3 per ton, f. o. b. Baumgardner's Station, Pa.

Blooms.—The demand continues to be of fair proportions, and prices are steady at the following quotations: Charcoal Scrap Blooms, $45 to $47; Charcoal Ore Blooms, $40 to $42; Charcoal Billets of superior quality, $55 to $62; and Bars for converting into steel, made of best Champlain Iron, $68 to $70. Sheet Iron Billets, 4½ to 5x15 strictly Cold-blast Charcoal, $64 to $67·50. Slab Blooms for Boiler Plates, Cold-blast Charcoal, $57·50 to $60.

Bar Iron.—The market continues dull and weak, and the past few days show no improvement in the condition of the trade, but the reverse. There is a very unsettled feeling throughout and no sort of uniformity in prices. Sellers are more numerous and more urgent, and prices seem to be getting lower all the time. This may not be the case so much in fact as in appearance, as it is said prices have for a long time been down at or below cost of production. The following circular from a Pennsylvania firm indicates the general position of the trade and explains itself: "We regret to inform you that, owing to the extensive manufacture of very inferior Irons made from Old Rails and large amounts of cinder, the Association of Western Iron Manufacturers have concluded to reduce the card of Iron to 1·75 rates. If any of our friends desire Iron not guaranteed and without our brand, we will manufacture it at card rates; but if superior guaranteed Iron is wanted, we are compelled to adhere to former rates. That best Refined Iron cannot be made at the new card rates is patent to any one acquainted with its manufacture, and we do not propose sacrificing our reputations by using inferior stock." There are a good many orders for Bridge Iron hovering around, and it is supposed they will be placed soon, but so far there is but little new business to report. We quote Bars from 2c. to 2·2c., according to quantity and quality.

Plate and Tank Iron.—There has been nothing of importance done since our last report, and business seems to be in abeyance again. There are numerous inquiries, and a tolerably large consumption is going on, but buyers will not take hold until they need stock, and as sellers are anxious to secure business and continually pushing sales, the market is weak and depressed. We continue our quotations of last week: *Ship Plate*, about 2½c.; *Common Plates*, 2¼c., and *Tank Iron*, from 2¾c upward, according to quality.

Sheet Iron is in fair demand, but prices are easy, and for large lots some concessions could be obtained. We quote 3·1c. to 4c. for the various numbers, according to quantity and quality.

Steel Rails.—There is no special change to note, but there is a little more anxiety to secure business, and, in consequence, prices in some instances have been shaded. The market in a general way, however, is steady, and for small lots full prices are realized. Buyers of large lots for prompt cash have special advantages, and when such are in the market there is keen competition to secure their business. The Steel Rail trade is, nevertheless, in a satisfactory condition, most of the mills having two or three months' orders on hand at prices which are no doubt remunerative. Sales of the past week amount to 8000 to 10,000 tons at about $49 at mills. One lot of 5000 tons is understood to be at a lower figure.

Iron Rails.—There is nothing new to report, and business is still dull and depressed. A few sales are reported of light sections at prices varying from $36 to $40, Philadelphia delivery, and Steel Rails, at $39·50. The above sales represent nearly 1000 tons, in addition to which a few small lots of heavy Rails are reported at about $35 to $36 at mills. We quote the market dull and quiet at $33 to $37 at mills, according to quantity, quality and terms of payment.

Spikes.—There is a fair demand, but prices are easy, and for large lots some concessions would be made. We quote: Railway Spikes, $2·25 to $2·50, and Mining Spikes, 4 to 4½ by ½, 2¾c.; 4 to 4½ by 7-16, 3c.; 3½ to 4 by ⅜, 3½c.

Old Rails.—The demand is rather quiet, but as offerings are not large or pressing, quotations of last week have been maintained. Sales in small lots are reported at $20, $20·50, $21, and in one case a choice lot brought a shade higher price. The market may be quoted quiet at $20 to $21.

Old Car Wheels.—Nominally, $18 to $18·50.

Old Car Axles are held at $30, with buyers at $29.

Scrap Iron.—The market is dull, but as offerings are light no change can be made in quotations. Some concessions would have to be made to place lots promptly. We quote Cast, $15 to $17; Wrought, $23 to $26; the latter an extreme figure for choice lots.

Nails.—The trade is badly demoralized, and prices are made to suit the buyer. A meeting of the Eastern Iron Association was held a few days ago, when it was decided to leave the nominal quotation $2·75, with full liberty to all the members to meet competition in any way they chose. We hear of sales at $2·60, and less in special cases.

Tin Plates.—There is no change to note in prices, although concessions would probably be made for round lots. The demand is improving, and Philadelphia is increasing her trade in Plates all over the country. We quote, jobbing lots: I. C., 10x14, Best Charcoal Bright, $7·50 to $8; I. X., 10x14, $9·75 to $10·25; Best Charcoal Leaded, 28x20, $14 to $14·50; good Charcoal Leaded, $13·50 to $13·75; other good brands, $12·50 to $13·25; good Bright Tin for Cans, &c., $6·50 to $7·25; Coke Leaded, 14x20, $6 to $6·50.

Lead.—There is very little business doing, and the market is weak. We quote Domestic nominal at 6·50c. to 6·62½c., currency; Foreign, 6·75c., gold. A sale of Spanish for prompt cash is reported at about 6 35c., gold. The transaction was exceptional, however, and does not fairly represent the market. Manufactured is steady at 7⅜c. for Bar Lead, 9c. for Pipe and 9¼c. for Sheet, less 10 per cent. to the trade.

Shot.—Drop Shot, 25 lb. bags, 9¼c.; do., 5 lb. bags, 10¼c.; Buckshot, 25 lb. bags, 10¼c.; do., 5 lb. bags, 11¼c.; Conical Balls, 25 lb. bags, 10c. per lb., net; Bar Lead, 5 oz., ¼ lb. and 1 lb. bars, 7¼c., less 10 per cent. to the trade.

Old Metals.—Market steady at following quotations, except for old Lead, which is a shade lower: Heavy Old Copper, 17c. to 17½c.; Light Tinned Copper, 15½c.; Copper Bottoms, 15c.; Heavy Red Brass, 14c.; Heavy Yellow Brass, 10½c.; Heavy Clean Pipe Lead, 5½c.; Junk Lead, 5¼c.; Tea Lead, Light Paper, 5¼c.; Tea Lead, Heavy Paper, 5c.; New Zinc Clippings, 4½c.; Old Sheet Zinc, 4¼c.; Yellow Brass Turnings, 9½c. to 10¼c.; Plumbers' Lead Joints, 6½c.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, April 17, 1877.

Pig Iron.—Trade continues dull, and while poor stock is weaker, some sales having been made recently at a slight reduction, first-class Mill Irons, being in light supply, are held as firmly as ever, no disposition whatever on the part of holders to make concessions. The general position of the market, however, in sympathy with the products, is not as favorable as it was some weeks ago, and the trade generally are feeling discouraged. It was thought a month ago that prices would be advanced, but the indications now are not as favorable as they were then, although it is generally conceded that good Red-shorts will hold their own in consequence of the very light supply and production. Bituminous Coal and Coke Irons are quoted as follows: No. 1 Foundry, $23·50 to $24, four months; No. 2 do., $22·50 to $23; Gray Forge, $20 to $21 for Cold-short and Neutrals, and $22 to $22·50 for Red-shorts.

Manufactured Iron.—There is nothing particularly new to record; business continues dull and unsatisfactory, the demand is light, and prices, in addition to being unremunerative, are irregular. Both jobbers and consumers, in view of the checkered course of the market in the past, have but little faith in the future, and, notwithstanding prices are down to if not below the cost of production, there is no disposition manifested to anticipate future wants. However, it is but proper to state in this connection that but few orders are being solicited; also that manufacturers are not any more disposed to sell at the bottom prices than buyers are to buy. It is well known that good stock cannot be made to be sold at current rates—1·75c. base—and some makers, who have a reputation for making good iron, aver that rather than damage it by using inferior pig or old rails, they will shut down and keep what stock they have, unless buyers are prepared to pay a living price. One good effect of the Cleveland reduction is that it will curtail production, and there was not much chance to get prices up while the production was so largely in excess of the consumption; and another is, the card has been put so low that there is no room for cutting.

Nails.—There has been a very decided improvement in the demand for Nails during the past week, which is owing to belief on the part of buyers that the recent reduction is only temporary, and being apprehensive of an advance, buyers generally are inclined to anticipate future wants. It was agreed by the Western Association recently that no contracts for future delivery should exceed 30 days, and manufacturers generally are refusing to sell any large lots, their policy being to supply the immediate wants of regular customers only. It is intimated that the card is likely to be put back to where it was prior to the recent decline before long. Some makers, it is understood, are favorable to an advance over the old card. Current rates: $2·60, 60 days, for less than 200 kegs, and $2·50 for 200 kegs and upward, with the usual discount of 2 per cent. for cash.

Horse and Mule Shoes continue quiet and unchanged. In 100 keg lots, $3·80 for the former and $4·80 for the latter.

Steel.—There is a steady demand in all the various grades. Mills are all busy, but no recent change in prices. Tool Steel quoted all the way from 12c. to 15c.; most of the sales at 12c. to 13c. Machinery Steel, 6½c. to 8c; Common Plow Steel, 5½c.; best Refined do., 7½c.

Scrap.—The demand for all kinds of Scrap continues light, and the market is very dull, and prices weak and drooping. Car Wheels (gross ton), $20 to $22; Old Rails (gross), $18 to $21; No. 1 R. R. Scrap (net), $23 to $25; Boiler Scrap, $23 to $25. Nearly all the Scrap is sold on four month's time. The contract between the Iron manufacturers and puddlers, under the terms of which the latter receive $5 a ton for puddling, will expire by limitation on the 1st of May, after which it is said the manufacturers will refuse to pay that price any longer, on the ground that the condition of the Iron market will not warrant it.

Window Glass.—Some of the Window Glass factories are in operation, while others are idle. It is thought, however, that the strikers will soon give up the contest and go to work, as there is no prospect of their being successful.

BOSTON.

APRIL 14.—*Pig* is dull and easy, with no reliance placed on the reports from New York of 50c. better prices. We quote $23·50 @ $25 for No. 1, $23 for No. 2 and $22 to $23 for Gray Forge. Scotch Pig is dull. We quote $27 to $30 for store lots. *Bar* is dull, quoting $47 to $48 for Refined, and $38 to $39 for Common. Nails are in light demand. *Copper* has shown rather more activity on the war news. The foreign markets are reported firmer by cable. For Manufactured we quote: New Sheathing, 31c. to 32c.; Bolts and Braziers, 32c. to 32½c.; Yellow Metal Bolts, 26c. to 26½c.; do. Sheathing, 21½c. *Lead* is steady at about unchanged prices. A war in Europe would probably lead to higher prices. We quote: Pig, 6⅝c. to 6¾c., currency, for Domestic; Sheet, 9½c.; Pipe, 9c.; Tin Lined Pipe, 16½c.; Bar Lead, 8½c., less usual trade or 10 per cent. discount. *Antimony* is quiet at 13c. to 13½c., gold, for Boston spot lots, and *Spelter* is easy, closing at $6·50 on the spot for 10 ton lots. *Tin* is quiet, and prices are nominally unchanged. We quote: Straits, 17½c.; Banca, 19⅝c. to 20½c.; Refined English, 17c. to 17½c., gold. We quote Plates: Charcoal I. C., $7 to $7·50; Coke, $6·10 to $6·25; and Terne at $6·75 to $7·25, gold.—*Commercial Bulletin.*

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 217 North Third street, St. Louis, under date of April 12, report the Iron market as follows: Trade has been very dull since our last report. Our market at present shows no encouraging prospects of any better prices, and without a more active demand we see nothing to prevent a further reduction. We quote same as last:

CHARCOAL.

Missouri No. 1 Foundry	$23·00 @ 25·00	—4 mos.
" No. 2 Foundry	22·00 @ 23·00	—4 mos.
" Gray Mill	22·00 @ 23·00	—4 mos.
Hanging Rock No. 1 F'dry	25·00 @ 26·00	—4 mos.
" No. 2 F'dry	23·50 @ 24·00	—4 mos.
" Gray Mill	23·00 @ 24·00	—4 mos.
Tennessee No. 1 Foundry	23·50 @ 24·00	—4 mos.
" No. 2 Foundry	22·50 @ 23·00	—4 mos.
" Gray Mill	22·50 @ 23·00	—4 mos.

COKE.

Alice H. R. Ex. A No. 1 F'dry.	$26·50 @	—4 mos.
" " A No. 1 F'dry	25·50 @	—4 mos.
" " B No. 1 F'dry	24·50 @	—4 mos.
" " No. 2 F'dry	23·50 @	—4 mos.
" " Mill	23·50 @	—4 mos.
" " No. 1 Silver Gray	24·50 @	—4 mos.
Chattanooga, Tenn., No. 1 Foundry	25·00 @	—4 mos.
Chattanooga, Tenn., No. 2 Foundry	23·50 @	—4 mos.
Chattanooga, Tenn., Forge	22·50 @	—4 mos.
" " White and Mottled	21·00 @	—4 mos.

STONE COAL.

Missouri No. 1 Foundry	$25·00 @ 26·00	—4 mos.
" No. 2 Foundry	23·00 @ 24·00	—4 mos.
" Gray Mill	22·00 @ 23·00	—4 mos.
" White and Mottled	21·00 @ 22·00	—4 mos.

COLD BLAST CHARCOAL—All Numbers.

Hanging Rock	$35·00 @ 46·00	—4 mos.
Tennessee	30·00 @ 33·00	—4 mos.
Kentucky	30·00 @ 33·00	—4 mos.
Missouri	28·00 @ 30·00	—4 mos.
Georgia	28·00 @ 30·00	—4 mos.
Alabama	28·00 @ 30·00	—4 mos.
Assorted Bar Iron	@	2¼ rates.
No. 1 Wrought Scrap	·95 @	
Heavy Cast "	·70 @	
Light Cast "	·40 @	

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of April 13: Shipment of about 100 tons Charcoal is the only movement in that class of Pig Iron the past week I have to chronicle. Holders are firm and offers under quotations declined. The price of Anthracite Pig is lower, and sales, in a small way, quite active.

Virginia cold-blast Charcoal Pig Irons	$28·00	@ 35·00
Virginia hot-blast Charcoal Pig Irons	24·00	@ 28·00
Va. hot blast Coke Pig Iron, No. 1 ex.	24·00	@ 25·00
" " " " No. 2 ex.	22·00	@ 23·00
" " " " No. 3 ex.	19·00	@ 20·00

CINCINNATI.

Messrs. L. R. HULL & Co., under date of April 14, write us as follows: PIG IRON.—We are able to report a more active market, and a considerable number of sales for future delivery have been made. Prices remain unchanged, and with no immediate prospect of a change upward. We continue to quote various grades as follows:

HOT-BLAST FOUNDRY.

Hanging Rock No. 1, Charcoal	$ ton.	$25·00 @ 25·50—4 mos.
Hanging Rock No. 2, Charcoal		22·50 @ 23·00—4 mos.
" No. 1, Coke		24·00 @ 25·50—4 mos.
" No. 2, "		22·00 @ 24·00—4 mos.
" No. 1, Stone-coal		22·00 @ 23·00—4 mos.
Virginia No. 1, Coke		23·00 @ 24·00—4 mos.
" No. 2, "		21·50 @ 22·50—4 mos.
Ala. and Tenn., No. 1, Charc'l		23·00 @ 23·50—4 mos.
" " No. 2, "		22·00 @ 22·50—4 mos.
Red-short, No. 1, Coke		25·00 @ 25·50—4 mos.
Fannie U. S. Scotch, No. 1		24·50 @ —4 mos.
Alice " No. 1		25·50 @ —4 mos.
Am. Scotch, No. 1		22·00 @ 22·50—4 mos.

FORGE IRONS.

Hanging Rock No. 1, Charcoal	$ ton.	$22·00 @ 22·50—4 mos.
Hanging Rock No. 1, Coke		21·00 @ 22·00—4 mos.
Virginia, No. 1		21·50 @ 23·00—4 mos.
Ala. and Tenn., No. 1, Charc'l		21·00 @ 22·00—4 mos.
Red-short, No. 1, Coke		22·00 @ 23·00—4 mos.
Cold-short, No. 1, Stonecoal		20·00 @ 21·00—4 mos.

CAR WHEEL AND MALLEABLE.

Hanging Rock	$ ton.	$40·00 @ 45·00—4 mos.
Southern and Western Brands		30·00 @ 40·00—4 mos.

ORE.

Lake Superior	$8·50 @	—cash.
Virginia Hematite (Washed)	4·50 @	—cash.

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of April 16, write us as follows: The market is quiet and without change in either price or tone. The receipts continue small, but are fully equal to the demand. The usual time, 4 months, is allowed on the quotations below:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$24·50 @ 25·50
No. 2 " "	22·00 @ 23·00
No. 1 Southern, Charcoal	21·50 @ 24·00
No. 2 " "	20·50 @ 21·00
No. 1 Hanging Rock, Stonecoal and Coke	23·00 @ 24·00
No. 2 Hanging Rock, Stonecoal and Coke	21·00 @ 22·00
No. 1 Southern, Stonecoal and Coke	21·00 @ 21·50
No. 2 " " "	20·50 @ 21·00
"American Scotch"	23·00 @ 23·50
Silver Gray	19·00 @ 21·00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neut'l.	20·00 @ 21·00
No. 1 Stonecoal and Coke, Cold-short and Neutral	20·00 @ 20·50
No. 2 Stonecoal and Coke, Cold short and Neutral	19·00 @ 19·50
No. 1 Missouri and Indiana Red-short.	24·00 @ 24·50
White and Mottled, Cold-short and Neutral	16·00 @ 17·00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast	37·00 @ 40·00
Alabama and Georgia, Cold-blast	28·00 @ 35·00
Kentucky, Cold-blast	28·00 @ 40·00

BALTIMORE.

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of April 16: We have no change to report in the Iron market, and continue last quotations as follows:

Baltimore Charcoal	$29·00 @ 31·00
Virginia "	28·00 @ 32·00
Anthracite No. 1	21·00 @ 22·00
" No. 2	20·00 @ 21·00
" No. 3	19·00 @ 20·00
White and Mottled	16·00 @ 17·00

CHATTANOOGA.

Mr. S. B. LOWE, under date of April 16, reports as follows: The usual activity has prevailed in metals during the past week, and shipments have aggregated about 500 tons Iron and 100 tons Ore. Prices remain unchanged:

COKE.

No. 1 Foundry, extra	$21·50 @ 22·00
No. 1 Foundry	20·00 @ 21·00
No. 2 Foundry	18·00 @ 18·50
Gray Forge	16·50 @ 17·00
White and Mottled	15·50 @ 16·00

HOT-BLAST CHARCOAL.

No. 1 Foundry, extra	$21·00 @ 22·50
No. 1 Foundry	19·50 @ 20·50
No. 2 Foundry	18·00 @ 18·50
Gray Forge	17·00 @ —
White and Mottled	16·50 @ —

COLD-BLAST CHARCOAL.

Car Wheel Metal	$23·00 @ 28·00
" " extra standard	30·00 @ 35·00
Forge Metal	18·00 @ 21·00
Muck Bar	31·00 @ 35·00
Old Car Wheels	17·50 @ —
Old Rails	16·50 @ 17·50
Brown Hematite Ore, 50 to 56 per cent. per ton	$2·00 @ 2·50
Red Fossiliferous Ore, 50 to 56 per cent. per ton	1·80 @ 2·00

CLEVELAND.

Messrs. C. E. BINGHAM & Co., 25 West Main street, under date of April 16, quote the Iron market as follows, 4 mos. time:

FOUNDRY IRON.

No. 1 Lake Superior Charcoal	$26·00—4 m.
No. 2 " "	25·00—4 m.
No. 1 Anthracite	23·00—4 m.
No. 2 "	22·00—4 m.
No. 1 Bituminous	23·00—4 m.
No. 2 "	21·00—4 m.
No. 1 Cherry Valley Am. Scotch	24·00—4 m.
B—1 " "	23·00—4 m.
No. 2, " "	22·00—4 m.
No. 1 Massillon	24·00—4 m.
B—1	23·00—4 m.
No. 2	22·00—4 m.

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal	$26·00—4 m.
No. 4 " "	27·00—4 m.
Nos. 5 & 6 " "	27·00—4 m.

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal	$25·00—4 m.

FORGE IRON.

No. 1 Gray	$21·00—4 m.
White and Mottled	19·00—4 m.

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels).

PARIS, April 1, 1877.—*Metals.*—The spring demand has hardly begun to manifest itself, and general business is in quite a backward state. Many complaints are heard from the interior, where one industry after another begins to suffer. The uncertainties connected with Eastern affairs are also a great hindrance to a revival in business. *Copper.*—The few dealings in this city have thrown the market back into apathy. We quote: Chili Bars, 190 francs; Common ditto, 183·50; Ingots, 192; Best Selected, 195, and pure Corocoro Ore, 190. Havre shows no alteration, notwithstanding the lighter charters on the West Coast, and quotes as heretofore, first brands Chili Bars, 187·50 to 190; good current ditto, 180 to 183·75; and Lota and Urmeneta, 181·25. Not much strength is exhibited at Marseilles, where Red Tokat commands 185; small Refined Ingots, 185 to 190; Sheathing, 225; Bolts, 235; and Yellow Metal Sheathing, 210. *Tin.*—The course of this metal is the reverse of satisfactory to holders; the stock at London is now larger than ever, and the deliveries during the month just brought to a close have been but moderate in extent. Under these circumstances, and in view of the uncertain business outlook on the continent, we shall have to be prepared for a continued low ruling of prices. We have remained quiet here in response to the low Dutch sale, and make no change. Marseilles is steady and quotes: Banca, 200; Straits, 195; Billiton, 190, and English Refined, 200 francs the 100 kilos. Havre is tolerably well supported as follows: Banca at 194; Straits and Billiton, 190; Australian, 188·50, and English, 190. *Lead.*—The immediate future of this metal, both in England and on the continent, remains quite uncertain. The spring demand has thus far proved a disappointment, and it is as yet doubtful how politics at the East will shape. Very little has transpired here. We quote French 53 francs, and other ports 52·50, the 100 kilos. Havre is steady at nominally 54 to 54·50. Although little is done at Marseilles, the market is rather firmer. They quote First Fusion soft, 50·50 francs; 2d ditto, 50; pipe and sheet, 57, and shot, 55. *Spelter* is again easier in England, but on the continent it has remained rather more active, and bids fair to do well in the immediate future, unless the political horizon again becomes obscured. We have remained quiet here, and quote as follows: Silesian deliverable at Havre, 54·50 francs the 100 kilos; other good brands, 54·50, and at Paris, 54·75. Marseilles remains unchanged at 51, for old remelted. *Iron.*—There is not much doing. The quantity of Iron absorbed by this city in January has been greatly in excess of the corresponding period last year, due in a measure to the works going on preparatory to the Exhibition, but also to increased private activity in building, &c., and is, therefore, a good sign. But this has not improved prices. Sheet Iron, which previously sold at 185 francs and even 190, can, in larger quantities, now only be placed at 180. Accounts from the Haute Marne are more favorable as regards the better descriptions, but inferior quality is more difficult of sale than ever. In the Meurthe and Moselle Coke Iron is quoted 170 to 180; mixed, 200 to 210, and Charcoal puddled, 215 to 225. Some Sheet Iron orders have been executed at 200 and 220 francs, according to size. Affinage Pig Iron only commands 61. At the North, Coke Iron remains 170, and 3 millimeters Sheet, 220 to 230. The Rhone district is looking up; Merchant Iron at 200 to 205; Sheet at 310 to 320; Bessemer Rails at 230 to 240, and Sheet Iron, 270 to 280. At a recent adjudication of 6000 tons Bessemer Steel Rails the price tendered and accepted was 214 francs per ton delivered in this city.

BELGIUM.

(Revue Universelle).

BRUSSELS, April 1, 1877.—*Iron.*—Little of special interest has transpired during the week. The slight spring animation noticeable for a week or two past has procured makers some orders, to fill which it will take a couple of months, but beyond this we see no encouraging prospect. Affinage Pig has declined below 5·20 francs; Moulage is abundantly offered at 7·25. Good brands, Merchant Iron, remain steady on the basis of 13·50 francs. The shareholders of the Dubrunie Society, founders at Tourcoing, have come to the resolution to wind up the concern. These are most valuable works, favorably located, with the most perfect tools and material, and several offers have already been made to the liquidators. Most of the forges maintain their price of 170 francs for immediate delivery, and decline to accept the same figure for futures beyond a month hence. According to their views an improvement is imminent. We should be glad if these expectations were realized, but hopes of the kind have remained unfulfilled so repeatedly of late that we prefer not to share their sanguine views. Some of the forges have accumulated stock already and are obliged to make concessions, and we should not be surprised if 165 francs soon became the established basis for further dealings.

GERMANY.

(Borsenhalle).

HAMBURG, March 31, 1877.—*Metals.*—Business in the metal trade has been slightly looking up on the approach of spring-like weather, and the immediate future appears less discouraging. *Copper.*—This metal has been decidedly more active, without as yet leading to a general improvement. At Berlin good qualities English and Australian fluctuate between 78 and 83 marks the 50 kilos, and Mansfield between 80 and 80·50. Here, Drontheim may be quoted 82; Minnesota Ingots, 101; Quincy, 92, and English Tough Cake, 79. *Tin.*—A better feeling has begun to manifest itself, without thus far influencing values. Berlin quotes Banca 78 to 78·50 marks, and English Refined, 76 to 76·50. Here, Banca now commands 80 to 81; English, 80 to 83. A lot of Banca previously brought 76. *Lead.*—The German markets are rather weaker. At Berlin, Tarnowitz, Hartz and Saxonian are quoted 21 to 21·50 marks. Stettin is firm at 26·75 and German 23 to 24. We are tolerably steady here at the following rates: Spanish, 23; English Pig, 23 to 23·50; ditto, Sheet, 24 to 24·50, and German, 22·50 to 23. *Spelter.*—Our markets have relapsed into quietude, but remain nevertheless firm, especially in this city. Berlin quotes Silesian 21 to 21·50 the 50 kilos; Stettin, 22·50 to 23·50; spot, here, 21·60, and futures, 21·50.

HOLLAND.

(Koch & Vuerboom)

ROTTERDAM, April 3, 1877.—*Tin.*—Since the late sale, which averaged 42¾ guilders for Banca, the market has remained quiet, but a single sale of Banca being reported at 42¾, and of Billiton one at 42¼. The stock on warrants in the hands of the Netherland Trading Society on the 1st instant amounted to 59,691 slabs Banca, and 54·4 Billiton, against 82,760 Banca in 1876. March deliveries, 10,040, Banca, against 5916 in 1876. Since January, 30,371, Banca, and 2010 Billiton, against 20,157, and 100 in 1876. Banca afloat by sail: 8425 piculs, against 8100. Stock of Billiton in private hands, 27,430; delivered since Jan. 1, 23,266.

AUSTRALIA.

(Resident.)

BRISBANE, Queensland, Jan. 23, 1877.—*Tin.*—The quantity of Tin forwarded by rail from the Warwick terminus during the past year was 8664 tons Stream and Ingot Tin, which reduced at 70 per cent. fine would equal 6064 tons pure Tin, against 7019 tons pure in 1874 and 6032 tons pure in 1875. The detailed figures show conclusively that the £4 rise which has taken place in the price of Tin within the past six months has given production a slight impetus, for the last quarter 2539 tons of Stream and Ingot came down by rail, against 2030 the previous quarter and 1862 the preceding one. At all events, the above statistics show that no falling off in quantity has occurred, and it may with confidence be asserted there is no nearer prospect of the Stanthorp and New England Tin fields giving out than there was 12 months ago. The reverse is the fact, for the more work is done the more apparent is the extent and richness of the field. Smelting on the field has turned out a miserable failure, and has now altogether ceased. The numerous companies with one exception have failed. *Copper.*—Copper is again coming to the fore. There are some splendid mines to be had for 5 per cent. of their English value in this colony, many rich deposits lying undeveloped for the experience necessary and a little capital to work them.

EAST INDIES.

(Gilfillan, Wood & Co.)

SINGAPORE, Feb. 28, 1877.—*Tin* has been brought forward in moderate quantities, and the demand being fair for all quarters, we have had an advance from $19·50 to $20·12½ per picul. These prices do not pay producers, and we must expect a consequent falling off in production. Shipments from the Straits to the United States, thus far since January 1, 2147 piculs, against 7744, 17,911, 8892, 5877, 9048, 7226 and 9135 in 1876 to 1870. The August cleared for New York, taking but 68 piculs Tin; the Holga has been laid on since, and will be followed by the Star of the East. For Boston the Moltke has been chartered. Exchange, 4/3.

(Clark, Spence & Co.)

POINT DE GALLE, Ceylon, March 1, 1877.—*Plumbago.*—The fine grades continue exceedingly scarce. *Coal.*—Very large arrivals for local firms and the companies, consequently no demand. The Ardenconnel's cargo was sold at Colombo at 14 roupees ex ship. The Khersonese from Liverpool, with 2400 tons Welsh Hartley, was ordered to Bombay to discharge. The Goatfell seeks a market for 1000 tons Scotch.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., April 2, 1877.

THERE HAS BEEN NO CHANGE

worthy of special attention in trade matters since my last letter was penned. Everything remains quiet and uncertain, even as to the immediate future, mainly owing to the unsettled condition of the Eastern political negotiations. Despite this, however, there is a clearly better tone apparent through all this incertitude and dullness, and I have not the slightest doubt, personally, that the settlement of the Eastern question will be the signal and first departure for a very considerable improvement in commerce and trade.

THE SHEFFIELD SAW GRINDERS,

who are the chief obstructives in the way of a much required development of that important branch of local industry, have another fair rub given to them by a leading contributor to the Sheffield *Telegraph*. That writer says:

"The ostrich hides its head in the sand, thinking thereby to save both its head and its feathers from the pursuer. Our saw makers must not act like the ostrich. A short time ago I mentioned American saws in connection with the name of Distin. What was the answer? Was it thanks? No; it was an intimation that I was trying to scare the Sheffield saw makers with a ghost made up of a white sheet and a turnip lantern. Distin! Pooh! He was losing his connection. Is that so? A Sheffield man, himself in the saw trade, was in Ireland last week, and he found wherever he went that the saws of Distin and of another American manufacturer had been offered and had been pretty freely sold to his customers. Now here is a problem. How is it that saws made with dearer labor and dearer fuel than ours can be put down at the doors of Irish buyers at prices which secure purchasers? Men and masters here must waken up. Here in Sheffield the materials, the labor and the geographical position are such as make this invasion of our home market a severe reflection on local enterprise. In some respect or other the men or the masters or both have, clearly, been caught napping."

Of course, Henry Disston & Sons is the firm meant, and it is not a bad advertisement for the Keystone house.

MR. ALEXANDER MACDONALD, M. P.,

has been advising the workingmen of Scotland at considerable length during the past week, and has once more demonstrated that nobody knows so much about anything as Alexander. He did tell his hearers several things which were true, nevertheless, and gave them advice under several heads which was wholesome. He advised, for instance, that 20,000 of them should emigrate to Nevada or California, where they might get work at $4 (gold) daily! On the question of American competition with us in iron and coal, Alexander thus majestically held forth:

"It was said that America was beating us in the race, but let it be understood by every man present that they were being misled when they were told that America could beat us in that field. Why, what was the true state of things in that country? At the present moment a tariff of 26/ was paid for every ton of iron that entered the port of New York, and the large quantities of manufactured goods imported were charged at the rate of 30 to 34 per cent. *ad valorem* duty, to prevent them entering the market. Remove the tariff tomorrow, and the day after, as far as competition was concerned, we were bound to close every work in Pittsburgh, the great iron field of the United States. Only the works that were far in the interior—in Missouri, Ohio and Illinois—could continue to exist. The other day a deputation of ironmasters waited upon the Chancellor of Germany, Prince Bismarck, and the cry was that the English makers were outselling them in their own markets. Remove the whole of the restrictive duties, remove the tariff, leave our country free to enter the various ports of the world, and he ventured to say that no country in the world could compete with the iron and coal trades of England at the present moment."

THE BOILER MAKERS' AND IRON SHIPBUILDERS' SOCIETY'S

forty-second annual report is a document of 174 pages, and is not by any means cheering in proportion to its bulk. The secretary, Mr. Knight, of Liverpool, thinks the climax of the depression of trade has been reached. During the year no less than $35,219 have been expended in sick and other similar relief, or £5739 more than in 1875. Eight new branches, with 1278 members, have been added to the roll, making the total membership at present 17,469, and a balance in hand of £45,327, as against £51,217 last year. I believe the Society has branches in America.

RUSSIAN PROTECTION

is again being heard of, and we are paragraphically told by some of our newspapers that "by order of the Russian government, all locomotives, railway carriages and rolling stock purchased by Russian railway companies must henceforth be manufactured in Russia, and in order to foster these native industries the government will not only allow raw materials to be imported duty free, but will also pay premiums and subsidies to the Russian manufacturers."

I give this information for what it is worth. I think it requires a little salt.

THE BESSEMER STEAMER

has fallen very low indeed from the original design of its ingenious inventor, and has just undergone a thorough process of reconstruction. The swinging saloon—the very *fons et origo* of the vessel—has been removed, and in its stead ordinary cabins and forequarters have been put in. Yet, further, the original steering apparatus has been taken out and Brotherhood's patent gear fitted in. Under these altered conditions the vessel went a trial trip last week, and with 130 tons of coal aboard, made 15 knots an hour, with only 25 pounds pressure of steam, in a rough swell.

STEEL ARMOR PLATES.

You will doubtless have seen from the *Times* of March 31st that Messrs. Cammell & Co., of Sheffield, have constructed a series of armor plates of iron and steel combined and steel only, for the purpose of testing the value of that material as compared with the ordinary armor of iron only. Some years ago a patent was taken out by a local man for casting armor plates in Bessemer material, but it has never been worked yet in a practical shape.

THE WEEK'S FAILURES

have been of a rather serious nature, the chief having been that of the Buryport Smelting Company, of Llanelly, South Wales, with liabilities roughly set down at £300,000. In the Liverpool cotton trade Messrs. Isaac Low & Co., an old house, with agencies at many American towns, has suspended, with liabilities variously estimated at from £100,000 to £200,000. At Darlington, Mr. Thomas Greener, a well known coal and coke merchant, doing a large business with the Sheffield steel melters, has stopped with debts amounting to £200,000. At Huddersfield, Mr. J. W. Stansfreed has failed, owing £10,000, and at Sheffield Mr. Joshua Beddard, iron agent, has petitioned with debts reaching over £7000.

BOILER EXPLOSIONS

would appear to have been epidemic during the past week, judging from the number of such accidents reported in the papers. At Coatbridge a pit boiler exploded, killing one man and injuring another. At Milngaire, Scotland, a bleaching boiler blew up, killing four boys, and at Heckmondurke the boiler of a cordials manufactory exploded with such force as to wreck the premises. Lastly, while a goods train was standing at Aluc Station, near Darlington, the locomotive boiler exploded, and quite destroyed engine tender and part of the station premises.

LAST YEAR'S RAILWAY ACCIDENTS

are very ably summarized in a return just presented to Parliament. During that period 65 persons were killed and 1486 injured. Details are furnished as to each class of accident, but these I must omit from want of space. I quote the following particulars, however, as being of much importance to all engaged in the manufacture of railroad iron and rolling stock: "Of the 880 tires which failed, 33 were engine tires, 21 tender tires, 18 carriage tires, 24 van tires and 784 wagon tires; of the wagons, 575 belonged to owners other than the railway companies; 135 tires were made of steel, 706 of iron, and of the remaining 39 tires the material was not reported; one tire was fastened to its wheel by Brotherhood's patent and three by Mansell's patent, and none of these left the wheels when they failed; 37 tires were fastened by Beattie's patent, one of which flew from it when it broke; 88 tires were fastened by Gibson's patent method, and of these three flew off their wheels when they failed; 710 tires were fastened to the wheels by rivets or bolts, of these 63 fractured at rivet holes and eight of them flew off the wheels; two tires had been simply shrunk on to their wheels, and both of them came off; and one other tire, which had been fastened by dovetail clips, also flew off when it broke; the method of fastening was not reported in 38 cases; 593 tires split longitudinally or bulged, and 39 fractures occurred at the weld.

"Of the 397 axles which failed, 224 were engine axles, viz., 195 crank or driving and 29 leading or trailing; 16 were tender axles, nine carriage axles, 140 wagon axles, and eight were axles of salt vans; 45 wagons belonged to owners other than the railway companies; of the crank axles 150 were made of iron, 37 of steel, and of the remaining eight the material was not stated; the average mileage of 142 iron crank axles was 148,655 miles, and of the 37 steel axles 98,847 miles.

"Of the 564 rails which broke, 351 were double-headed, 105 single-headed, and the section of eight was not given; 272 were iron rails, 168 steel rails, and the material of 24 was not reported; of the double-headed rails, 188 had been turned, 139 had not been turned, and in 24 cases the information was not given."

SCOTCH PIG IRON

has been quiet all round during the week, with some little weakness in prices. Several furnaces have been blown out, leaving only 104 in blast in Scotland, as against 118 at the same date of last year. Despite this step, stocks continue to be augmented, there being now 129,107 tons in Connal's stores, as against 62,484 tons same time 1876. Freights remain quiet at 2/ Glasgow to New York. During the week the members of the Glasgow Exchange have moved into their splendid new building, in commemoration of which removal they presented a fine silver epergne and salver to Sir James Watson, who was the first to start stock broking in Glasgow, nearly fifty years ago.

Writing under date March 29th, Messrs. Jas. Watson & Co. thus report: "We have to report an irregular market for Scotch Pig Iron, the price having declined in the early part of the week from 53/7 to 53/3½, cash; to-day a rally took place, and 53/10 was at one time accepted, closing easier, however, at 53/7½ per ton. Shipments last week were 9312 tons, against 8984 tons in the corresponding week of 1876." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	55/3	52/
Gartsherrie, "	61/6	54/3
Coltness, "	65/	54/9
Summerlee, "	60/	54/
Langloan, "	62/	55/
Carnbroe, "	56/6	53/6
Calder, at Port Dundas	61/	53/6
Glengarnock, at Ardrossan	59/6	54/6
Eglinton, "	56/6	53/3
Dalmellington, "	56/	52/6
Shotts, at Leith	61/6	55/6
Kinneil at Bo'ness	56/6	53/

The prices current of John E. Swan & Bros. (Limited) gives No. 1's as under: "Gartsherrie, 61/; Coltness, 64/6; Glengarnock, 59/, and Eglinton, 55/6 per ton."

THE LABOR QUESTION

is peeping out its ugly head in many parts of the country, and there are in various quarters strikes of both sorts, some for increased wages and some against employers' reductions. The Tyne riveters are striking for 10 per cent. extra, while the blast furnacemen of the North of England are under notice of a similar drop; as also are many of the colliers throughout the whole country.

THE NORTH OF ENGLAND,

or, as it is generally called, Cleveland, is now becoming one of our largest and most important iron districts, although its pig iron is only of a mediocre quality. I allude to it in order to quote the quarterly report of Mr. Waterhouse (the sworn accountant to the Northern Board of Arbitration) for the three months ending Feb. 28, as to the quarter's sales and prices. He certifies the average net selling price per ton to have been £6. 18/3 for that period, and gives the subjoined details of

Sales During the Three Months Ending February 28, 1877.

Description.	Weights invoiced. tons.	cwt.	qr.	lb.	Per centage of total.	Average net price per ton. £	s.	d.
Rails	7,232	2	3	27	7·64	6	2	7·69
Plates	51,830	2	3	14	54·75	7	2	3·82
Bars	18,114	16	2	13	19·13	6	19	1·71
Angles	17,487	16	2	0	18·48	6	11	9·39
Total	94,664	18	3	26	100·00	6	18	3·16

During the previous quarter the average price was £6. 16/6, so that quotations would appear to be hardening, chiefly as regards rails. Plates are 1/2 per ton lower, and angles, 1/8 per ton lower; but bars are 1/9 per ton higher, and rails, 1/9, also dearer.

TRADES OF SHEFFIELD.

Quietude is still the general rule in all directions, there being such sluggishness, in fact, that it is tedious to have to allude to it in these reports week after week. The merchants are building a little on the supposition that list prices will be altered at the April quarterly meetings, but producers do not hold out the expectation that this step will be a possible one.

Pig iron, in some quarters, has seemed to have had a tendency to harden, but in other directions there has been an opposite indication, and a few fair sized parcels are reported to have changed hands at a shade under last week's figures. Rather more forge pig is being brought into South Yorkshire from the North Lincolnshire smelters, and the Leeds foundries are using heavier parcels from the same source. North Lincolnshire pig quotations average about the following: No. 1, 59/6; No. 3, 54/; No. 4 forge, 50/ to 51/; mottled, 49/; and white, 48/; all f. o. r. Frodingham. Leeds "Aireside" No. 1 is still held at about 54/; No. 2, 52/; No. 3, 51/; No. 4, 50/; forge, 50/; mottled, 49/; and white, 49/; f. o. r. at Leeds. Hematites are steady, and are likely to remain so while the Bessemer trade continues to rule as brisk as it now does. Maryport "Hematite" No. 1, is 70/; No. 2, 67/6; No. 3, 65/; No. 4, 65/; No. 5, mottled, and white, 65/; Maryport "Bessemer" No. 1, is 70/; No. 2, 67/6; and No. 3, 65/; all with the customary 2½ off for prompt cash. Millom Bessemer is 72/6; No. 2, 70/; and No. 3, 67/6; Millom ordinary No. 3, 67/6; No. 4, 67/6; and No. 5, 67/6; on four months' terms, or with 2½ off for cash. Beside these houses, there are some ten or a dozen others which send hematite pigs into this district at quotations closely approximating to the above. Some of the Bessemer makers here are taking advantage of the current low rates to buy in as much pig as they can get hold of, but they find venders shy of forward contracts except at accumulating rates.

I notice with some surprise that it is again reported by some of the newspapers that the Midland Railway Company is intending to roll its own rails. It is further stated that, although the plant is not yet completed, it will be so within a few months. I may say that this appears merely to be the revival of a rumor which was officially contradicted last year.

In edge tools, files, saws, and certain kinds of engineering requisites, there is rather more business doing, but no real activity in any single instance.

The Butterly Iron Company, whose works are near Ripley, Derbyshire, have reduced their quotations for manufactured and merchant iron 20/ per ton, making good bars £8. 10/ at Sheffield warehouse; plates, £9. 10/; and sheets, £9. 10/; girders, £9 to £20, according to section, and deck plates proportionately. Facts which may influence the quarterly meetings.

At Jessop & Sons' meeting of shareholders last Wednesday, Mr. Jessop's gift of £45,000 to the company, received its due need of praise. Mr. Chadwick, M. P., one of the directors said he had recently visited America, where he had found the agencies very efficient and the affairs in a satisfactory state. Mr. Waterhouse, in the course of a speech, said: "Everyone who knew the steel trade ought to be very well satisfied that they had got any dividend at all. It had been one of the most disastrous years in the steel trade that had probably ever taken place. Although he did not believe that the American trade would ever be equal to what it had been, he believed that Jessop & Sons would be the last name on Sheffield steel sold in America. He believed the dark cloud on American trade was gradually disappearing, and that there was a great future in store for that company." These remarks were received with cheers.

THE STAFFORDSHIRE AND BIRMINGHAM

iron trade remains very quiet indeed, despite the keen underselling which is everywhere in vogue. One leading Staffordshire ironmaster declares he is selling at £2. 10/ below the list price, which gives £6. 10/ for bars, which are officially quoted at £9 per ton. If anything would or could prove the utter inutility of the "list" I suppose that fact ought to do it. Not that I think it will—by no means, because once you get a thing established in Great Britain and you might as well try to pull down the Throne as to uproot a custom. In hardwares there is a little more steadiness observable, particularly in the edge tool trade, in which some good Indian government contracts are being worked off. Chains and traces are also selling more freely for India and the United States, and all branches of builders' ironmongery continue to move off pretty rapidly.

THE CHILLINGTON IRON COMPANY

has just issued its annual report, which shows a loss of £7500 on the year's working, and states that this is the first occasion on which no dividend has been paid. The directors attribute this bad result to the depression of trade and other causes, among which they recount the high protective duties of the United States.

THE SOUTH STAFFORDSHIRE MANAGERS

of mills and forges have an association, and are in the habit of preparing and reading papers among themselves. At last week's meeting Mr. Wright was elected president, and the secretary, Mr. John Lester, was presented with his portrait. In acknowledging the latter presentation Mr. Lester remarked that: "More than in any other district, discipline was lacking in the iron works of South Staffordshire. From that district, however, there went forth, to the North-west of England, to Belgium, and even to the United States, men who were the foremost in the industry. If to their practical skill discipline were added at home, the iron trade of South Staffordshire would be largely advantaged." Another speaker, Mr. George Adams, proprietor of the Mars Iron Works, Ettingshall, dwelt on the necessity that existed for remunerating labor according to its intrinsic value and not by any fixed arbitrary scale. Mr. Adams' remarks were so pointed that I have pleasure in giving them at some length; thus: His own experience satisfied him that such action had now become imperative upon English employers. He found himself at every turn subjected to German competition; sometimes merely a few pence per ton, and in others the slightest variation in gauge wrested from him orders which would have found his men considerable employment. One puddler was not as good as another; and though every puddler was paid by the ton, yet the product of one puddler was invariably better or worse than that of another. And so on through all departments of the iron making industry. There would be no difficulty in the iron trade of arranging an equitable system of remuneration, and such a system ought to be adopted. Mr. Adams then explained the circumstances under which he had given notice to all his men to leave his employment. He had posted a notice that the services of all his men would be dispensed with after a certain date. He and his sons had, he said, striven their very utmost to find work for the hands, and had kept them on when little or no profit was to be got. The other night, however, they were running short of "blue billy" for fettling; by a considerable effort on his own part, and by extra exertion on the part of the agent of the firm who supplied this fettling, a boat load of it was got into the canal adjoining the works when the night turn began. The furnaces were all ready, and were capable of running three heats without fettling; before one heat was out the fettling would have been laid at the puddlers' feet; every one of them, however, struck work because the "blue billy" was not there when the night turn began, and he was subjected to the inconvenience and loss of all the furnaces having been got up without any work having been done. Seeing that he had recently had to make so much effort to find them work without any profit to himself, he came to the conclusion that this treatment merited that he should take care of himself; he had yet, however, to determine what course he should pursue. As to the future of trade, Mr. Adams expressed a decided conviction that the worst has not yet been seen.

SOUTH WALES AND MONMOUTHSHIRE

have remained quiet during the week, with no very large exports of iron, but considerable export of coal and coke. Tin plates are again reported to be lower in prices.

THE METAL MARKETS

have been slow, with no great amount of business and a decided tendency to lower prices.

Von Dadelszen & North say: "*Copper.*—There is no change to report since our last. Prices remain fairly steady at £70. 5/ to £70. 10/ for g. o. b., and £71. 5/ for picked brands. The charters up to the 27th inst. are given as 1400 tons. Australian nominal; Wallaroo, £77 to £77. 5/; Burra, £75. 10/ to £75. 15/. English quiet; tough, £76. 10/ to £78; select, £77 to £78. 10/. *Tin* has been easier, and as low as £70. 10/ has been accepted for Straits, and £69. 15/ for Australian, closing firmer, with but little doing. The Dutch sale took place yesterday, when the whole 23,500 slabs of Banca were sold at an average of 42⅛ fl., equal to £72. 10/ in London. English, £74 for ingots. *Tin Plates* are steady, but little business doing. *Spelter* dull in the absence of demand; price, £20. 10/. *Lead*, owing to large arrivals of Spanish, is rather more in buyers' favor. We quote: English pig, £21. 2/6 to £21. 7/6; Spanish, £20. 5/ to £20. 10/. *Quicksilver* firm; £7. 10/ per bottle. *Antimony* unchanged; £51 to £53."

Messrs. Vivian, Bond & Watson (March 29th) reported as under: "*Copper.*—The market during the past fortnight has been extremely dull, and prices have varied very slightly. At the Wallaroo sale, on the 20th inst., when 512 tons were sold, 454 tons of cakes realized £76. 15/ to £77. 5/, and 58 tons of ingots £77. 17/6 to £78, making the average of the whole sale £77. 2/6 per ton. The 400 tons of Burra were afterward sold at £75 to £76. 2/6; average, £75. 7/10 per ton. The transactions in bars have been very small, at £70 to £70. 10/, and we close quiet at

£70. 10/ sellers, £70. 5/ buyers. In furnace material we do not hear of any transactions by private treaty, and there has been no Swansea sale this fortnight. The Chili charters for first half of this month were advised by cable on the 19th inst. as 900 tons bars and 150 tons ores and regulus for England, and 50 tons fine for the continent; total, 1100 tons. *Tin* has been very steady at £71 to £70. 10/ for Straits, and at the sale of Banca yesterday in Holland the whole quantity, 23,500 slabs, sold at a price equal to £71. 5/ in Holland, or £72. 10/ ex ship, London. The market closes steady at £70. 10/ for Straits; Australian, £69. 15/; English, £74 to £75. Small sales of Peruvian at £65 to £63, according to quality."

The *Mining Journal* remarks: "*Copper.*—A quiet market, with unusually slight fluctuations, there being no pressure to sell, and no eagerness to buy; and the near approach of the Easter holidays makes dealers indifferent about leaving anything open. There will probably be little or no change in the position of this metal until business once again resumes its ordinary course, and that cannot well be until after the ensuing week. *Lead.*—This metal does not occupy such a favorable position, and prices have slightly given way. Good English Pig is now quoted down to £21, and Spanish 5/ to 7/6 per ton less. The demand for builders' and plumbers' work is still very inactive, and the continued wet weather prevents progress in these branches of the trade so rapidly as could be wished. *Quicksilver.*—A very large business has been lately transacted at £7. 5/ per bottle, and the demand showing little or no abatement, sellers have declined to accept that figure any longer, and have advanced their price to £7. 10/ for Spanish. Italian could be bought at 1/ per bottle less. *Spelter.*—The price of Silesian has shown scarcely any variation, £20. 10/ to £20. 15/ being the ruling quotation. Zinc at public sale to-day realized £24. 2/6 to £24. 5/, being slightly dearer than the last sale. *Tin.*—Business at the moment is sluggish, and prices for all descriptions easy. The Dutch sale of 23,500 slabs of Banca took place on Thursday, and the price realized was 42 to 43 guilders, or an average of 42⅓ guilders, equal to £72. 10/ ex ship London. In Australian a fair quantity has changed hands, down to £69. 15/ for cash, and in Straits, £70. 10/. English is quoted at £74."

Liverpool prices unaltered:

Iron: f. o. b. in Liverpool, per ton.

	£	s.	d.		£	s.	d.
Merchant bar	6	15	0	@	7	0	0
Merchant bar, in Wales	6	5	0	@	6	10	0
Staffordshire	7	0	0	@	9	15	0
Hoop	7	15	0	@	8	15	0
Sheet	8	15	0	@	9	15	0
Nail rod	7	10	0	@	8	0	0
Bar, best crown	7	5	0	@	8	0	0
Boiler plates	9	0	0	@	10	0	0

Tin Plates: f. o. b. in Liverpool, per box.

	£	s.	d.		£	s.	d.
Charcoal, I. C.	1	3	0	@	1	5	0
Coke, I. C.	0	18	6	@	1	1	6

Copper: Delivered in Liverpool, per ton.

	£	s.	d.		£	s.	d.
Bolt and Sheathing	88	0	0	@	0	0	0
Tile	81	0	0	@	0	0	0
Tough cake	81	0	0	@	0	0	0
Best selected	83	0	0	@	0	0	0

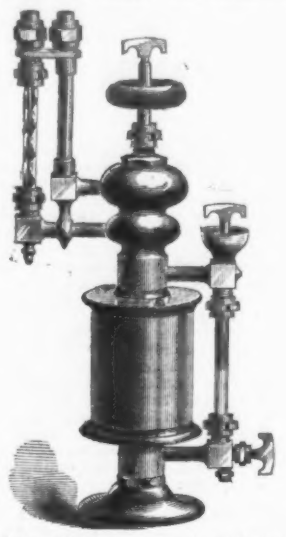
American Ingenuity.

The London *Colliery Guardian* says: Ingenuity, almost peculiar to it as a nation, is shown by the United States in every branch of manufacture. By the varied implements which are devised for him at home, the American farmer is able to till the teeming soil upon which he is located with a facility which has gone far to make his country what it is. And England has been benefited by the ingenuity of the agricultural engineer of the new world, not simply in the increased food supply of our people, but in suggestions of which our own engineers have availed themselves to the immediate advantage of our own implement trade, though it cannot be said that English engineers have not abundantly returned the compliment. The rapidity with which British designs applicable to transatlantic use, or profitable to transatlantic adoption, find their way across the Atlantic and become utilized in the agricultural implement, as well as other industries, is striking. There is, however, a quicker appreciation by the Americans of the elementary necessities of people having wide primitive acreages, than is shown by the majority of Englishmen. And this is giving them an advantage of which they are availing themselves. Russia has long been among the best foreign customers of the agricultural implement maker of the United Kingdom, from whom she has obtained excellent goods, though not perhaps in the variety usually available to the American farmer. The chief and the increasing competitor of the corn growing Muscovite has been this same American. Recently it has been pointed out that, inquiring into the latter's success, the former has sent to America commissioners who have come to the conclusion that the success is more a question of tools than of anything else; hence, that an inspector and agent of several Russian boards of agriculture has ordered from one American firm no fewer than 10,000 plows; that a pattern of a mowing machine, adapted to Russian soil, has also been selected, and a considerable number put into hand by the makers, while experiments are in progress in New England to ascertain the best kind of portable engine for Russian employment.

It is within our knowledge that the Americans are supplying agricultural implements as well as edge tools and general hardwares to Australia and New Zealand; and the information this week is that they have succeeded in devising a light plow, which even the Kaffir farmer has taken up, yoking it, as he now is, to a pair of oxen, to the displacement of the time-honored mamootie, which the Kaffir laborer has for so many years made to do, in his own hands, the work of the spade and the plow. The American has only just entered the Cape market; but once in, he has a faculty for remaining, and there is reason to conclude that, in all the four great foreign markets we have indicated, he is likely to make his implements and his hardwares increasingly popular, and he is beginning to sell new world hardwares, as well as plows, to our fellow subjects at the Cape. The last mail thence contained the ominous requirement that a certain valuable consignment of miscellaneous hardware requisites, before bought only from firms in England, should be made up wholly in America, though the merchant to whom the order was sent has his warehouse in the heart of the hardware industries of our midland counties. Our masters and men at home are capable of meeting all this competition, if they only make up their minds to do so. May it not be hoped that they will not deem it unworthy of their notice?

Harper's Lubricator for Steam Engines.

The Harper lubricator is intended to supply lubricating material to the steam for the purpose of lubricating the valves and cylinders of steam engines. The oil or tallow is thus carried to the parts directly, so that the danger of obstructed oil holes is avoided. The oil or tallow is floated from the reservoir by the condensation of the steam passing into it. As shown in our illustration, there are two tubes standing perpendicularly and parallel to each other, both being extended to the exhaust pipe, into which the right hand one enters a few inches above the other. This forms a siphon



which, being filled to a level with the lower end of the tube by the water from condensation, causes any surplus to be discharged into the exhaust pipe. The lubricating oil occupies the large cylinder or reservoir, into which, by means of the valve, such an amount of water is allowed to pass as corresponds with the quantity of oil required. The glass tube connected with this reservoir indicates the quantity of oil remaining in it, while the upper left-hand tube enables one to determine the amount of escaping oil, which may be increased or diminished at pleasure. Full particulars in reference to this lubricator may be obtained of the Harper Steam Lubricator Company, Westville, Conn.

The Barree Forge and Furnace.

Mr. J. T. Lowry, of Barree Forge, Huntingdon county, Pa., furnishes the Bedford *Inquirer* with an article on the Barree iron property, from which we extract the following:

Barree Forge and Furnace is located on the line of the Pennsylvania Railroad, nine miles west of Huntingdon, Pa., and both furnace and forge are run by water-power, supplied by the Blue Juniata. Barree Forge was originally built by Edward Bartholomew, of Philadelphia, and his son-in-law Greenberry Dorsey, of Baltimore, in 1785. At that time they got their metal from Center Furnace, in Center county, afterward from Huntingdon Furnace. About 1810 or 1812 Dorsey & Evans built Union Furnace; in 1838, Dorsey & Green built Mill Creek Furnace; in 1863, G. Dorsey Green built Barree Furnace, the only furnace built by the Dorsey or Green family now in operation.

Its location as an iron works is certainly one of the most favorable in our State. The landed property belonging to the estate consists of about 13,000 acres, which includes the celebrated Dorsey ore bank, which is situated directly southwest of the old Huntingdon Furnace property, and it was the iron made from these ores, over sixty years ago, that gave to the Juniata iron of this valley, in the days of Dr. Peter Shoenberger, its great reputation, but since which time, I am sorry to say, its merited reputation has been considerably diminished by the use of cheaper and inferior ores. This place was the home of Gen. Miles Green for over 45 years, but in December, 1875, he sold this property to the late Hon. A. L. Mumper, a capitalist of Bethlehem, Pa., for $170,000, cash.

After the death of Mr. Mumper the property was leased by Lowry, Eichelberger & Sons, who also run the Hopewell Furnace. The present furnace capacity at Barree is from 35 to 40 tons charcoal metal per week, and forge from 20 to 25 tons of slabs and blooms. During the summer months they employ about 80 hands, and in the winter from 75 to 100 wood choppers in addition. The metal is worked principally into blooms, which are shipped east and west on the line of the Pennsylvania Railroad and find a ready sale. The blooms and slabs are worked up into boiler plate, locomotive, stay and carriage bolts, wire, etc., etc.; and recently an experiment has determined that the working of the above blooms into nail rods has produced an iron equal to Norway or Sweden for the manufacture of horseshoe nails.

German Competition in the Scissors Trade.—The Sheffield *Telegraph* says: "The annual meeting of the members of the Sheffield Scissors Manufacturers' Association was held recently. A very interesting discussion took place as to the active and successful competition in almost all kinds of scissors which the German manufacturers are carrying on, not only in distant markets, but on a very large scale in Sheffield itself. One speaker said that not only were large quantities of scissors being sold here, but he had information that a warehouse for the sale of such goods had just been opened in Sheffield itself. It was admitted by several gentlemen that the German scissors were by no means badly made and finished, and that they were being sold in Sheffield and elsewhere at quotations very materially below those of our own manufacturers. It was mentioned as a well known fact that most of the local manufacturers kept stocks of the German scissors, which they sold simply as such to any of their customers preferring the foreign-made articles. The German scissors are, for the most part, manufactured at Solingen, and are, strangely enough, made from Sheffield steel, so that they have to bear the freights in both directions, and yet can be sold in this town at prices which are 10 to 30 per cent. below the local figures. This fact, which is incontestable, points to the sole difference being in the cost of labor, which is very much cheaper in Germany than here. Taking this view of the question, one member proposed that the Association should not only act on the defensive, but should assume the offensive by at once taking steps to lower wages here. The meeting, however, did not entertain the suggestion, which accordingly fell through. As an illustration of the difference between Sheffield and German scissors, which may for this purpose be assumed to be of equal practical finish, we are informed that while a certain kind of scissors are sold by the Sheffield houses at 5/ each, the same goods from Germany are quoted 2/3 ex ship in London, which allows them to be retailed at about 3/ each. That this should be so is not a little remarkable when all the natural and manufacturing advantages possessed by Sheffield are taken into consideration."

England's New Torpedo Ram.—In the House of Commons, recently, Mr. W. Hunt, Secretary of State for the Navy, said: I propose to lay down at Chatham another Agamemnon, following the type that commended itself to us the year before last. The ship we propose to lay down is called a torpedo ram. I am not in a position to give the exact design. A design has been prepared, but modifications are in comtemplation, so that I cannot give it exactly or state the cost. But the cost, I take it, will be very considerably less than that of the iron-clads which have recently been laid down, and I hope that as a weapon of offense it will prove very destructive indeed. I should be disposed to ask, even if the design were completed, that I might be excused from giving the particulars. I known it is excessively difficult to keep any invention secret, and that when the work is going on in the dockyard it is next to impossible; but while the design has not gone beyond the Admiralty it is possible to keep it secret, at all events, to a certain extent, and I do not think we ought to let it become known to the whole world before we need. I may say generally that it is proposed this ram should carry armor, but not guns. Beyond that I hope the House will not expect me to go. This vessel must, of course, to a certain extent, be regarded as an experiment, and even supposing it to be a success, I could not propose it to the House as likely to supersede all other kinds of fighting ships, but only as a useful adjunct to a fleet in case of war. Probably it would not be desirable that it should be kept at sea for a long period at a time, but I venture to think it will prove a very formidable weapon, and if it should be a success, it may perhaps be regarded as a sort of rival to those monster ships with tremendous armor that we hear spoken of as likely to be built in some foreign ports.

Consumption of Sulphuric Acid.—F. S. Pease, of Buffalo, estimates the amount of sulphuric acid, 66° Beaume, used in this country in 1875 for the refining of petroleum at about 77,000,000 pounds in round numbers. He gives the following table as showing the consumption deduced from the amount of refined oil exported and consumed:

	Gallons.
Actual exports of refined oil and naphtha for 1875	217,270,522
An average amount of consumption equal to, say one-third	72,422,507
Total	289,694,029

Amount of sulphuric acid necessary and consumed for this amount of oil would be equal to 78,217,296 74·100 pounds. Comparing this estimate with another based upon the product, he finds that the average of both comparative statements equals 77,848,799 37·100 pounds of sulphuric acid, 66° Beaume, for 1875.

Labor Troubles at Springfield, Ill.—A communication from Springfield, Ill., under date of the 11th inst., says: A serious difficulty has arisen in the rail mill of the Springfield Iron Company here between the company and the heaters and roll hands in regard to wages. The yearly contract under which the men have worked expired last week, and so far the company and men have not agreed on a basis. To-day the men have been notified their services will not be required longer and that they will be paid off immediately. It is the intention of the company to supply their places with non-union members. The disagreement will leave all the best places open to new men. In the meantime four or five hundred men will be out of employment by the stopping of the works.

The Vulcan Iron Works, Chattanooga.—The Vulcan Works, of Chattanooga, which have been idle since the spring of 1874, are preparing to resume operations at once. A new roof is being put on the main building, all the machinery is being thoroughly overhauled, cleaned, and weak or worn parts renewed. Beside the facilities they now possess for making all sizes of bar iron, hammered car axles, fish plates, bolts of all sizes, light rail, &c., the company will add a couple of railroad spike machines, also 50 nail machines, which they are now looking around to purchase, as it is their intention to put in only the very latest improved patterns. The company have availed themselves of the services of Mr. S. B. Lowe in starting the works. Mr. Lowe having constructed the works, and had the exclusive management of them for a number of years, must be well posted as to the requirements of the market. The company, owning as they do two blast furnaces and their own coal banks, ought certainly to possess the facilities for placing their productions on the market at as reasonable a price as any concern in the country.

The color of so-called oxidized silver does not depend on oxidation but on sulphurization. The silver goods are dipped into a boiling hot solution of calcium sulphide or hyposulphite of soda, or into ammonium sulphide, until they have taken the proper color. "Old silver" is a coloration produced by laying on a mixture of black lead and oil of turpentine, or some fatty matter, and cleaning off with blotting paper until no more color comes away. Copper acquires a handsome look if treated in the same manner. An exchange says: "If it is desired to varnish oxidized silver, take 18 parts alcohol, 3 red arsenic, and one castor oil, and a non-transparent varnish can be made, which may be diluted with its own volume of alcohol, if a particularly thin coating is wished." We do not know the value of this mixture and should be cautious in attempting to use it.

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AMERICAN TACK CO. Factory at Fairhaven, Mass. N. Y. Salesroom, 117 Chambers Street.

COMMON, CHISEL POINTED, AND COPPER BOAT NAILS. ANY SIZE OR STYLE OF TACK OR NAIL MADE FROM SAMPLE TO ORDER.

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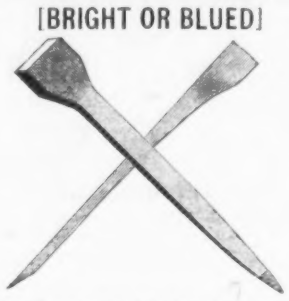

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[Accompanying engraving represents the Springfield Bridge, built by the Leighton Bridge and Iron Works.]

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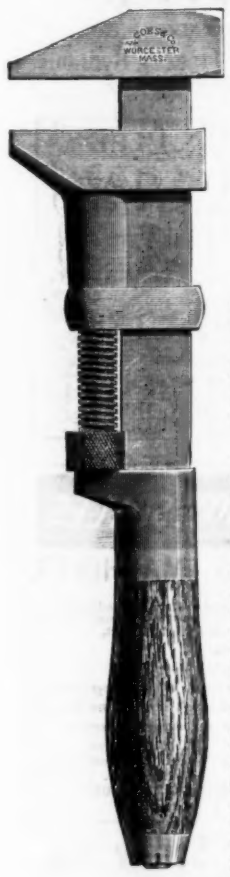
Genuine Improved Patent

SCREW WRENCHES.

Manufactured by



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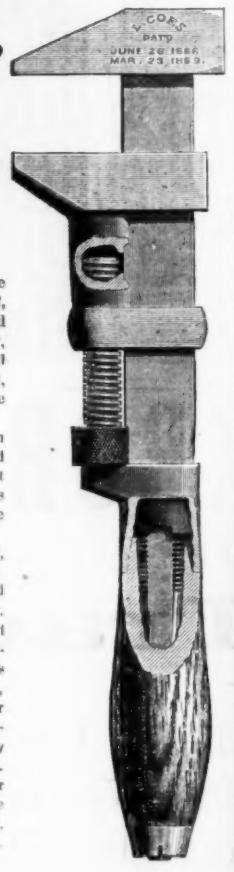
Worcester, Mass.

Established in 1830.

Registered March 31, 1874.



We invite the particular attention of the trade to our New Straight Bar Wrench, *widened,* full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact,* that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality.* Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

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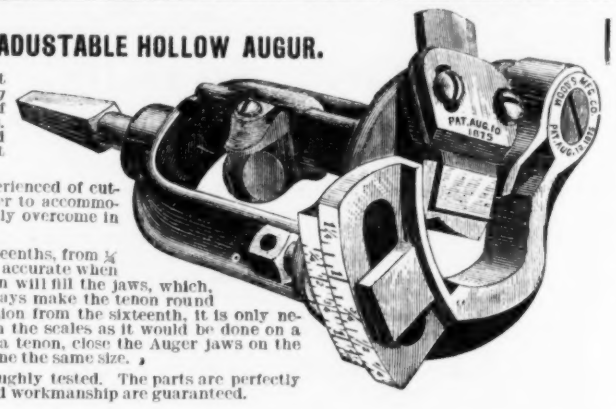
WOOD'S PATENT ADUSTABLE HOLLOW AUGUR.



The knife has an independent lip, and *only* requires *resetting* when sharpened. The jaws of this Augur are Steel Castings. The knife and adjusting bolt and nut are *forged* from the best *refined Cast Steel.*

The difficulty heretofore experienced of cutting any and every size, in order to accommodate variation in bits, is entirely overcome in this Auger.

The scales are laid off in sixteenths, from ¼ to 1½ inches, and are perfectly accurate when the knife is set so that the tenon will fill the jaws, which, having three bearings, will always make the tenon round and perfect. To cut any variation from the sixteenth, it is only necessary to make an allowance on the scales as it would be done on a rule. In repairing, to duplicate a tenon, close the Auger jaws on the old one and it will cut the new one the same size.

These Augers have been thoroughly tested. The parts are perfectly duplicated, and the material and workmanship are guaranteed.

We offer this as the latest improved and best Hollow Auger in market. It will surely take the preference until something better is invented.

PRICE, $4 each.

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HOWARD PARALLEL BENCH VISE.

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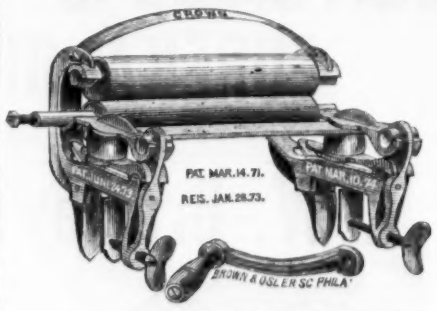

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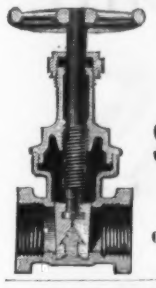

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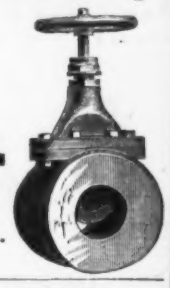

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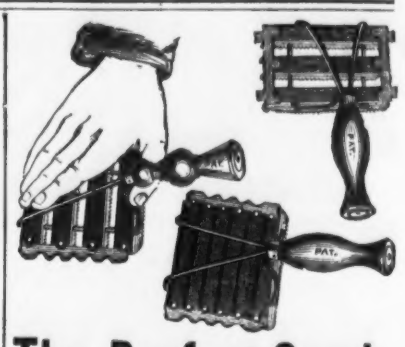

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We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb*, it is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

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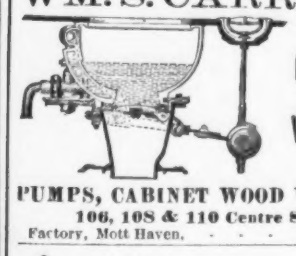

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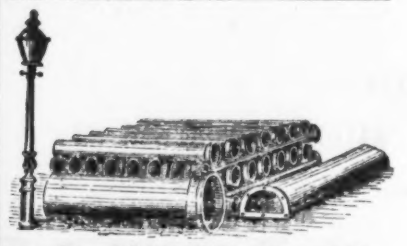

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Railroad Track Scales,

Coal, Hay and Cattle Scales,

Patented Furnace Charging Scales,

Warehouse and Platform Scales.

Testing Machines of any capacity.

Send for illustrated price list, mailed free. Tests made daily. Reports copied and kept confidential. Special attention devoted to repair work. Skillful Mechanics sent to all parts of the country. All work guaranteed.

The Hubbel Screw Co.,

LIMITED,

Are now prepared to sell, to approved parties, licenses to use the improvements in machinery for making Metal Screws, secured to them by Letters Patent, at the rate of fifteen dollars per month.

They are also prepared to contract for Machine Screws of every description made in solid dies.

Address

JOHN S. LENG, Treasurer,

No. 212 Pearl Street, New York.

P. O. Box 3565.

LENG & OGDEN,

212 Pearl Street, New York.

LANSDELL & LENG'S

Patent Lever and Cam Valves.

LANSDELL'S PATENT

Steam Siphon Pumps.

IRON

Of every description, for domestic use and export.

TACKLE BLOCKS

BURR & CO.,

Manufacturers of Waterman and Russel's

Patent Iron Strapped Blocks,

ALSO, MANUFACTURERS OF

ROPE STRAPPED BLOCKS,

81 PECK SLIP, NEW YORK.

The Iron Age Directory

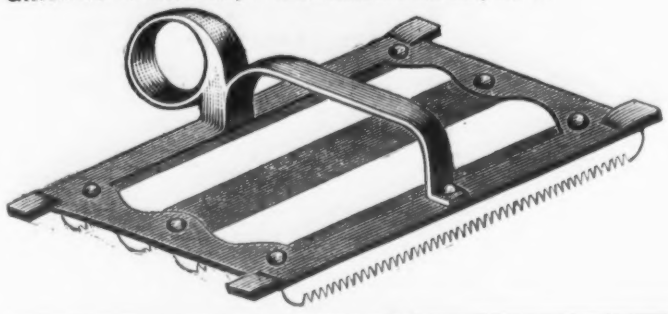
and Index to Advertisements.

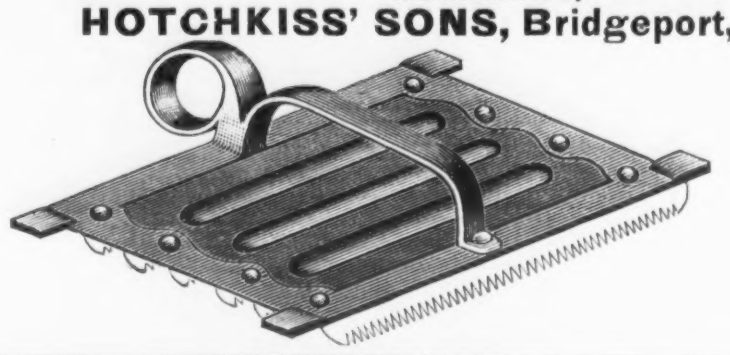
HOTCHKISS' PATENT NOVELTY COMBS.

These Combs do not infringe upon the rights of any one. They are the Simplest, Neatest and Most Durable CURRY COMBS ever offered to the trade, affording an easy grasp for the hand, without the use of the ordinary side handle, and are universally acknowledged to be superior to all others. They are neatly put up in paper boxes of one dozen each, and packed 24 dozen in a case. For Sale by all the General Hardware Trade. Special net prices furnished on application.

Sample and Warerooms with
GRAHAM & HAINES, 113 Chambers Street, N. Y.

Manufactured by
HOTCHKISS' SONS, Bridgeport, Conn.





THIS CUT ILLUSTRATES THE GRASPING OF THE COMB.

F. F. ADAMS & CO.,

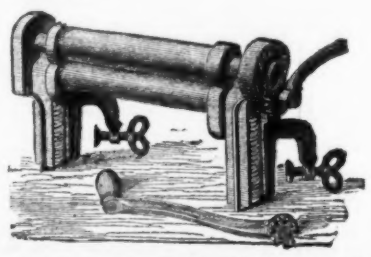
Erie, Pa.,

Manufacturers of Household Goods for Home & Export Trade.

KEYSTONE WRINGERS

ARE A SPECIALTY.

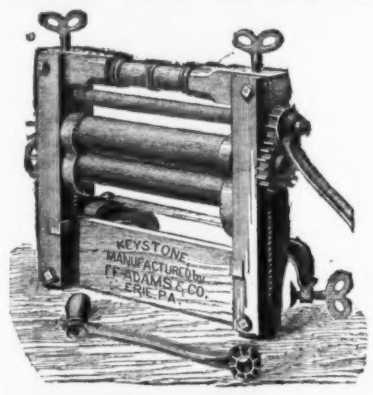
N. B.—We guarantee our customers full protection in the sale and use of all our Wringers, **PURCHASE GEAR OR OTHERS.**



This Cut represents our No. 3 Keystone Wringer.

RETAIL PRICE, $8 00.

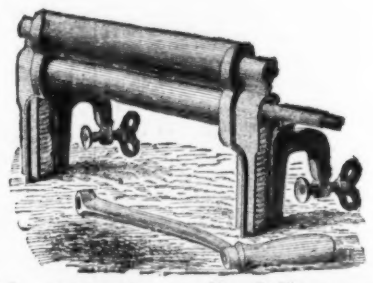
No.	Per doz.
3, Iron Frame, 10 inch Rolls, with Cog Wheels and purchase gear	$63 00



This Cut represents our No. 2½ Keystone Wringer

RETAIL PRICE, $9 00.

No.	Per doz.
2½, Wood Frame, 10 inch Rolls, with Cog Wheels and purchase gear	$66 00



This Cut represents our No. 2 Keystone Wringer.

RETAIL PRICE, $7 00.

No.	Per doz
2, Iron Frame, 10 inch Rolls, without Cog Wheels and purchase gear	$54 00

Correspondence Solicited with Jobbing and Export Houses.

Harvey W. Peace, Vulcan Saw Works.

Manufacturer of every kind of

Patent Ground SAWS.

TRADE MARK. HARVEY W. PEACE & Co.

Circulars, Cross-Cuts, Mill, Mulay, Gang, Hand, and Butcher.

Molding and Planing Knives, Plastering Trowels, Mitering Rods, &c.

Union Avenue, Tenth and Ainslie Streets, BROOKLYN, E. D., N. Y.

E. C. ATKINS. *ESTABLISHED 1857.* H. KNIPPENBERG.

E. C. ATKINS & CO., Indianapolis, Ind.,

Saw Manufacturers and Repairers.

Sole manufacturers of the celebrated

GENUINE SILVER STEEL DIAMOND X CUT SAW.

$1.50 Per Foot.

PATENT HANDLES AND GAUGE INCLUDED.

☞ **BEWARE OF THE IMITATION CALLED "DIAMOND TOOTH."** ☜

Wheeler, Madden & Clemson

MFG. CO.,

MIDDLETOWN, - - - - NEW YORK.

Manufacturers of

WARRANTED CAST STEEL

SAWS

Of every description, including

Circular, Shingle, Cross-Cut, Mill, Hand,

WOOD SAWS. Etc., Etc.

AMERICAN SAW CO.,

Manufacturers of

Movable Toothed Circular Saws,

PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds. **Trenton N. J.**

E. M. BOYNTON,

Manufacturer of all kinds of

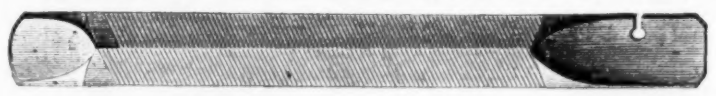
First-Class Saws, Saw Frames, Cross-Cut Handles, Tools, Files, &c.

Also Sole Proprietor and Mfr. of the Genuine Patent Lightning Saw,

No. 80 Beekman Street, NEW YORK.

Special attention is called to my new Centennial Saw, patented March 28th, 1876; Special File and Saw-Set combined, patented June 20th, 1876; Cross Cut (Loop) Saw Handle, patented February 15th, 1876; New One-Man Saw, with Patent Double Removable Handle Attachment, March 28th, 1876; New Patent Champion Clearer Tooth, patented August 15th, 1876; Saw Set, patented Nov. 25th, 1873—a perfect Set that a blind man can use to condense like a Hammer Set perfectly; Cross-bar Wood Saw Frame, patented Nov. 12, 1872; also Cross-Cut Handle, with castings, patented Feb. 15, 1870. These goods complete the scientific tools for cutting timber, instead of wearing it off with notched V teeth (which are like a fractured plate sharpened).

AWARDED CENTENNIAL MEDAL AFTER ACTUAL TEST.



PHILADELPHIA, November 11th, 1876.

REPORT ON AWARDS. GROUP No. 15.

Product: Saws in great variety; special improvement in shape of teeth, called Patent Lightning Saw.
Name and Address of Exhibitor: Eben Moody Boynton, New York.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for award, for the following reasons, viz:
Report: "Being of very Superior Quality and of great Practical Utility." DANIEL STEINMETZ, Signature of the Judge.

J. D. IMBODEN, of Virginia, CHARLES STAPLES, of Maine, G. L. REED, of Penn., J. DIFENBACH, of Germany, DAVID McHARDY, of Scotland, D. STEINMETZ, of Phila. } JUDGES.

A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.
Given by authority of the U. S. Centennial Commission.
J. L. CAMPBELL, Sec'y. A. T. GOSHORN, Director General. J. R. HAWLEY, Prest.

BAEDER, ADAMSON & CO.,

Manufacturers of SAND & EMERY PAPER & EMERY CLOTH.

(Also, in Rolls for machine work.)

Ground Emery, Corundum & Flint, Glue & Curled Hair, Hair Felt, & Felting for Covering Boilers, Pipes, &c., Cow Hide Whips.

Stores: PHILADELPHIA, 730 Market St., NEW YORK, 67 Beekman St., BOSTON, 143 Milk St., CHICAGO, 182 Lake St.

THE

Green River TIRE UPSETTER.

PRICE, $20·00.

Will work equally well on the lightest Steel Tire and on Wagon Tire 3 inches thick.

Frasse & Co.,

AGENTS,

62 Chatham St., New York.

Importers of and Dealers in

Fine Tools, Files, Steel Wire, &c.

D. W. HAZLETON & CO

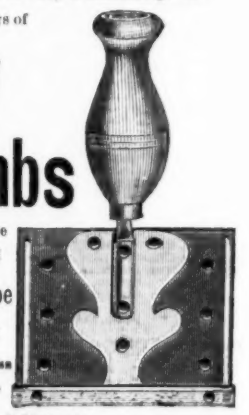
724 Girard Ave., Philadelphia

Manufacturers of

Curry Combs

Galvanized Square and Ornamental Conductor Pipe RIBBED TUBING

Stamped & Press Work to order.



Correspondence Solicited.

DUPLEX Curry Comb

We call the attention of Hardware Dealers to our Double Curry Comb, comprising a fine and coarse side; or virtually two combs in one. It is useful, durable and novel, and needs no argument to convince any one of its practicability. It sells on sight, and is bound to supersede all other combs. We want one reliable dealer in each State or large city to handle it. Correspondence solicited. Address

I. N. CASSELL, Fredericktown, Ohio.

BACKUS BROTHERS,

Manufacturers of

The Backus Water Motor,

Cor. Wright St. and Ave. A.,

bet. Chestnut St. & S. Broad St. Depots, **Newark, N. J.**

What They will do.

These Motors are adapted to running light machinery, such as Coffee Mills, Printing Presses, Lathes, Drug Mills, Church Organs, Sausage Cutters, Ice Cream Freezers, Elevators, Hoisting Machines and everything requiring similar power, in cities or towns where there are Water Works.

And the best "Motor" in the world for family sewing machines. Send for Circular.

New York Wholesale Prices, April 18, 1877.

HARDWARE.

Anvils.
American........₩ lb 15c. dis 20 %
Wright's........₩ lb gold 10½c; over 250 lbs 11c, gold
Armitage's Mouse Hole........gold 10 @ 10½c
Wilkinson's........₩ lb gold 11c
Eagle Anvils (American)........₩ lb 9c dis 20 %
Ash Sifters.
J. E. Corning's Barrel Head........dis 10 %
Rival........₩ doz $12·00 dis 10 %
Square........per doz $2·50 dis 20 %
Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mfg. Co. / Ives / Beecher (French, Swift & Co) / Griswold / Nobles Mfg. Co. / Kasson's Patent } 1st qual...dis 45&5 %; 2d quality.dis 50&5 %
Cook's, Douglass Mfg. Co........dis 50&5 %
" Ives........dis 50 %
Snell Mfg. Co........dis 30&10 %
Jennings' Bits........dis 10 %
Ives' "Jennings" Bits........dis 10&10 %
Lewis' Single Twist Bits........dis 25 @ 30 %
Andrews' Bits........dis 40&10 %
Griswold's Patent Bits........dis 20 %
Expansive Bits, Clark's small, $18; large, $26, dis 15 @ 20 %
" " Ives........$20 @ $30—dis 30 %
" " Blake's........$20—dis 40 %
" " Parmelee's......small, $20; large, $36........dis 25 %
Hollow Augers, Ives' / " " French, Swift & Co. } dis 33⅓ @ 40 %
" " Bonney's Adjust..₩ doz $48—dis 25&10 %
" " Stearns' Adjust...₩ doz $48—dis 25&10 %
" " Ives' Expansive......each $4·50—dis 40 %
" " Universal Expansive.each $4·50—dis 10 %
Gimlet Bits—Screw, $7·50; no screw, $9........dis 40 %
" " Diamond........per doz $1·00 dis 10 %
Double Cut Gimlet Bits, Shepardson's........dis 30 %
" " Ct. Valley Mfg. Co..dis 30&10 %
" " Hartwell's........dis 50&5 %
" " Douglass'........dis 25&10 %
" " Ives'........dis 33⅓ %
Morse's Bit Stock Drill, List of Jan'y 1, '76........dis 25 %
L'Hommedieu's Ship Augers........dis 20 %
Watrous Ship Augers........dis 20 %
Vaughan's Post Hole—
6 in. $23 00; 7, 8 and 9 in. $25 per doz........dis 20 %
Leci's........$5 00 each—dis 35 %
Awls, Brad Sets, &c.
Awls, Sewing, Common........per gross $1·35—dis 25 %
" " Best........per gross $1·60—dis 10 %
" Shouldered Peg........per gross 2·25—dis 15 %
" Patent Peg........per gross ·60—dis 15 %
" Shouldered Brad........per gross 2·70—dis 25&10 %
Brad Sets, Aiken's........per doz $12·00—dis 40 %
" No. 42, $10·50; No. 43, $12·50........dis 60 %
" Clark's........dis 50 %
" Stanley's Excelsior...No. 1, $11·00, dis 25&10 %
Axes.
Blood's........per doz $10 00 @ 11 00 net
D. R. Barton Tool Co........₩ doz $12 00 net
Hunt's........₩ doz $11 50 @ 13 50
Collins'........₩ doz 10 00 @ 12 00 net @ dis 5 %
H. Clark's (J.C.W. & Co.) bron'd or red..₩ doz $10, dis 5 %
Hurd's Razor Blade........₩ doz 9 00 @ 11 00
Simmons'........₩ doz 11 00 @ 11 50
Mann's........₩ doz 9 00 @ 11 90
" Double Bitted........₩ doz 21 00 @ 23 00
Underhill's........₩ doz 12 00 @ 13 00
" Crown........₩ doz 12 50 @ 13 50
John Leverett's........₩ doz 10 00 @ 14 00
Ten Eyck........₩ doz $9 00 @ 11 00 net
M. H. Jones & Co........₩ doz 11 50 @ 13 00 net
Elephant........per doz $9 00 @ 10 50 net
Axles.
Common (Guy C. Hotchkiss, Field & Co.)........₩ lb 4¾c
Solid Collar, Case Hardened, Chilled Box........₩ lb 8c
Axle Grease.—Frazer's........₩ lb 6c.
Balances.
Light or "Common"........dis 25&10 %
All other Spring Balances........dis 25 %
Bands.—Plated........new list dis 50&5 %
Iron Rim........new list dis 25&5 %
Brass (Plated list)........new list dis 50, 10&5 %
Oreide........new list dis 50&5 %
Bed Keys.
Gray's Ratchet........₩ doz $4 00, dis 15 %
Bells.
Hand, Light Brass........dis 75 %
" Extra Heavy........dis 40&10 %
" White Metal........dis 50&10 %
" Silver Chime........dis 20&10 %
" Swiss........dis 25 %
" Globe (Cone's Patent)........dis 20&10 %
Gong Abbe's........dis 20&10 %
" Yankee........dis 35&10 %
" Barton's........dis 35 %
Crank, Taylor's........dis 25&10 %
" Brook's........dis 50 %
" Cone's........dis 10 %
" Connel's........dis 50&10 %
Lever, Sargent's........dis 60&10&10 %
" Taylor's Bronze or Plated Lever........net
" " Japanned Lever........dis 25&10 %
" Hart, Bliven & Mead Mfg. Co........dis 50&10 %
Pull, " " "........dis 50&10 %
" Brook's........dis 50 %
" Western........dis 25&10 %
Call........dis 15 @ 20 %
Cow—Common Wrought........dis 20&10 %
" Western........dis 20&10 %
" " Sargent's........dis 60&10 %
Kentucky "Star"........dis 20&10 %
" " Sargent's........dis 60&10 %
Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog.
$12·00 10·00 9·00 8·00 6·00 5·00 3·50 2·50 5·00—dis 40 %
"Yaw's Genuine........dis 35 %
"Texas........dis 40 %
Bellows.
Blacksmiths', Common........dis 30 @ 35 %
" Extra and Pittsburgh Pattern........dis 20 %
Moulders'........dis 25 %
Hand Bellows........dis 20 %
Blind Adjusters.—Domestic........₩ doz $3—dis 20 %
Blind Fasteners.
Mackrell's........dis 30 %
Van Sand's........No. 3000, $14·00; dis 25 %
" old pattern........per gross, $10·50, dis 5 %
Washburn's Patent........₩ gross $14 00 dis 25 %
Merriman's........new list net
Blind Staples.
Boardman's Patent, ⅜ in. and larger........₩ lb 37 c
" ⅜ in........" 42 c
Blocks.
Differential Pulley Blocks........dis 30 %
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list........dis 30&10 %
Stanley Rule and Level Co........dis 25&10 %
Blowers.
Keystone Portable Forge Co........dis 20 %
Bolts.
Cast Iron Barrel, Shutter, &c........dis 60&10&10 %
Cast Iron Chain........dis 60&10&10 %
Wrought Iron Barrel........dis 50, 10&10 %
" " Square........dis 50, 10&10 %
" " Shutter (Stanley's list)........dis 50 %
" " " (Sargent's new list).dis 50, 10&10 %
" " Flush, Stanley's........dis 15&10 %
" " " Sargent's........dis 50&10&10 %
Carriage and Tire, Common........dis 75&5 % cash
" " " Norway Iron........dis 50&10 %
" " " R. B. & W........(old list) dis 65&5 %
" " " Philadelphia........dis 60&10 %
" " " Shelton's........(old list) dis 65&20 %
Union Nut Company, old list........dis 60&5 %
Stove—American Screw Co.'s........dis 45 @ 50 %
" R. B. & W........dis 50 %
" Shelton's Shaved Head........dis 45 %
" Union Nut Co........dis 45 %
Plow, R. B. & W........dis 40 %
Machine........dis 65 @ 70 %
Bolt Ends........dis 60
Borax.........12 @ 12½c. ₩ lb
Boring Machines. Upright. Angular.
Hovey's, no Augers........$3·15 $4 00 net
" with Augers........5·00 6·00 net
Parr's, no Augers........5·00 7·50 dis 30 %
" with Augers........7·80 10·00 dis 30 %
Kellogg's, no Augers........5·25 6·75 dis 15 %
Sweets' "........3·25 4·00 net
" with Augers........5·00 6·00 net
Snell's "........4·75 6·25 dis 25 %
Phillips' with Augers........ .... 10·00 dis 25 %
Bow Pins.
Union Nut Co........dis 60&5 %
Hotchkiss'........dis 55 %
Humason, Beckley & Co.'s........dis 60 %
Sargent & Co.'s........$19·70 and $21·40, dis 60&10 %
Braces.
Barber's Patent........dis 40&5 %
Q. S. Backus........dis 50 %
Wilson Mfg. Co........dis 10 %
Spofford's Patent........dis 50 %
Noble's Patent........dis 40&5 %
Ives' "Centennial"........dis 40&10 %
" "Novelty"........dis 50 %
Common Ball (American)........dis 25&10 %
Brackets.—Shelf........dis 60&10 @ 65&10 %
Bright Wire Goods........dis 65&10&10 %
Bull Rings.—Union Nut Co........dis 50&20 %
Sargent's........dis 66⅔&10 %
Hotchkiss'........2½ in., $2·25 net
Humason, Beckley & Co.'s........dis 60 %
Union Nut Co........dis 60&5 %
Butchers' Cleavers.
Humason & Beckley Mfg. Co........dis 20 %
D. R. Barton Tool Co........dis 20 %
Bradley's........dis 25 %
Beatty's........dis 20 %
1 2 3 4 5 6 7 8
$16·50 $19·00 $21·50 $24·00 $27·00 $30·00 $31·50 $36·50
Hart Mfg. Co........dis 50&10 %
0 1 2 3 4 5 6
$29·25 $29·75 $34·25 $38·75 $40·25 $49·50 $54·00
Butts.
Wrought Brass........dis 50 %
Cast Brass........dis 20 %
COMMON CAST, NOT DRILLED.
Fast Joint, Narrow........dis 30&12½ % }
" Broad........dis 40&12½ %
" " Jap'd........dis 35&12½ %
Loose Joint, Narrow and Broad........dis 50&12½ %
" " " Jap'd..dis 45&12½ % } 10 % for cash.
Parliament Butts & Mayer's Hinges..dis 40&12½ %
Loose Pin........dis 45&12½ %
Loose Pin Japanned........dis 55&12½ %
Loose Pin Jap'd, Plated Tips........dis 50&12½ %

DRILLED AND WIRED.
Fast Joint, Narrow........dis 25&12½ % }
" Broad........dis 30&12½ %
Fast Joint, Broad, Japanned........dis 30&12½ %
Loose Joint........dis 45&12½ %
" Japanned........dis 45&12½ % } 10 % for cash.
Parliament & Mayer's Hinges........dis 35&12½ %
Loose Pin, no Acorn........dis 42½&12½ %
" Acorns........dis 40&12½ %
" " Japanned........dis 50&12½ %
" " Plated Tips.dis 45&12½ %
Union Mfg. Co.'s Fancy Butts.—
Figured Enameled Loose Joint........dis 55&10 %
Boston Finish, Plain........dis 80&10 %
" " with Iron Acorns........dis 75&10 %
" " with Sil'd "........dis 65&10 %
WROUGHT IRON.
Fast Joint, Narrow........dis 40&10 %
" Lt. Narrow........dis 30&10 %
" Broad........dis 40&10 %
Loose Joint, Broad........dis 40&10 %
Table Butts, Back Flaps, &c........dis 35&10 %
Inside Blind, Regular........dis 35&10 %
" " Light........dis 40&10 %
Loose Pin, Wrt........dis 40&10 %
Am. Spiral Spring Butt Co., Japanned........dis 25 %
" " " Fancy........dis 10 %
Union Spring Hinge Co........dis 25 %
Union Mfg. Co. Spring Hinges........dis 25 %
Blind Butts, Parker........dis 70&10 %
" Palmer........dis 40&10 %
" Seymour........dis 60&10 %
" Shepard........dis 60 %
" Lull & Porter........dis 60 %
" Nicholson........dis 45&10 %
" Huffer........dis 33⅓&10 %
" Garretson........dis 60&10 %
" Clark's, Nos. 1, 3, 5, 40 and 50........dis 60 %
" " Nos. 2, 4, 4½, 6, 8, 10........dis 50&10 %
" Sargent's........dis 70&5&10 %
Can Openers.
Messenger's Comet........per doz $3·00 dis 20 %
American........per doz 2·25 dis 50 %
Lyman's........per doz 3·75 dis 20 %
No. 4, French........per doz 2·25 dis 50 %
No. 5, Iron Handle........per doz 2·25 dis 50&5 %
Sprague's........Nos. 1 2 3 4
Per doz $4·00 4·50 5·00 9·00 dis 55&10 %
Eureka........per doz $2·50 dis 10 %
Sardine Scissors........per doz $7·00 dis 40 @ 40&5 %
Caps—Percussion, per 1000.
Hicks & Goldmark's G. D. & S. R........37 @ 40c
" " E. B. 1-10 Ground........70c dis 5 %
" " E. B. 1-10 Turned........65c dis 5 %
" " D. W. P. 1-10........$1·40 dis 5 %
" " D. W. P. ⅛........$1·35 dis 5 %
" " Colt's 1-10........70c dis 5 %
Ely's E. B........1-4s, 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1·50; 1-10s, $1·58c., gold
Colt's........1-10s, 80c., gold
Carpet Sweepers.
Union........each $2 75 net
Welcome........each 2 75 net
Cartridges.—Metallic........dis 60 %
Cards.—Horse and Curry........dis 30&10 %
Cotton........dis 10&10 %
Wool........dis 15&10 %
Carpet Stretchers.
Cast Steel, Polished........per doz $5·00 dis 30 %
Cast Iron, Steel Points........per doz $2·00 dis 45&5 %
Casters.
Bed........dis 45 @ 50 %
Plate and Shallow Socket........dis 55 %
Deep Socket........dis 40 %
Cattle Leaders.
Hotchkiss' Sons'........net
Humason, Beckley & Co.'s........dis 60 %
Sargent's........dis 60&10 %
Union Nut Co........dis 60&5 %
Chain.
English Coil........net gold
₩ lb........11½ 8¾ 7⅝ 7½ 7½ 7c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2........by the cask, ₩ pair, gold 50 @ 52c
Trace, 7-10-2........by the cask, ₩ pair gold 55 @ 57c
German Halter Chain........dis 25 % gold
German Coil........dis 25 % gold
Galvanized Pump Chain........₩ lb 10½c.
Jack Chain Iron........dis 55&10 %
" Brass........dis 45&10 %
Chalk.
White........₩ gross, 55c net
Red........₩ gross, 75c net
Blue........₩ gross, 90c net
White Crayons........₩ gross, 14c net
Chisels.
D. R. Barton Tool Co. (all kinds)........dis 20 %
Socket Framing, Crossman........dis 60&5 %
" " Buck Bros......new list dis 17½ @ 20 %
" " Hart Mfg. Co., No 1......dis 60&10&10 %
" " Merrill........dis 60&10 %
" " Witherby Tool Co........dis 60&10 %
" Firmers, Crossman........dis 60 %
" " Buck Bros......new list dis 17½ @ 20 %
" " Hart Mfg. Co., No. 1........dis 60&10 %
" " Merrill........dis 60&10 %
" " Witherby Tool Co........dis 60&10 %
Socket Corner........dis 65 @ 70 %
Tanged Firmers, extra........dis 40 %
" " Butcher's........$5·25 to £ gold
" " Newbould's........$5·50 to £ gold
" " Spear & Jackson's........$5·00 to £ gold
" " Buck Bros (Shank)........$5·25 to £ gold
Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron........dis 25 %
" Adjustable, Gray's........dis 20 %
" " Lambert's........dis 20 %
" " Snow's........dis 40&5 %
" " Hammer's........dis 15 %
" Cabinet, Sargent's........dis 60&10 %
" Carriage Makers', Sargent's........dis 60&10 %
Coffee Mills.
Board and Box........dis 25 %
Increase Wilson's........dis 25 %
Selsor's Pat........$9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.)........dis 20 %
French Steel........dis 20 %
The Swift........dis 25 %
Compasses and Dividers.........dis 35&10 %
Bemis & Call Co.'s........dis 35&10 %
Cook's........dis 15 %
Excelsior........dis 40 %
Miller's Patent........dis 25&10 %
Coopers' Tools.
Bradley's........dis 15 @ 20 %
Chas. E. Little........dis 20 @ 25 %
D. R. Barton Tool Co........dis 20 %
Corkscrews.—Humason & B........dis 33⅓ %
Corn Knives and Cutters.
Bradley's........dis 10 %
Crow Bars.
Cast Steel........₩ lb 9c. net
Iron, steel points........₩ lb 5c
Crucibles.—Gautier & Co........₩ No. 5½c
Curling Irons, &c.
¼, ⅜, ½ in., $1·80, $2·00, $2·40........dis 10 %
Curling Tongs........₩ doz $6 50—dis 15 %
Pinching Irons........₩ doz 7 50—dis 20 %
Curry Combs.
Curry Comb Mfg. Co........dis 25&10 %
Fitch's (List of No. 240, $1)........dis 30&10 %
Hotchkiss' & Kellogg's, Iron & Brass, old list.dis 40&7½ %
Rubber........₩ doz, $9·00—dis 15 %
Wood Tooth (Fuller Bros.)........per doz $2·25 net
Clips, Axle.
Norway or Best........dis 50 %
Superior........dis 55 %
Cockeyes........1¼ in., 28c.; 1⅜ in., 33c.; 1½ in., 37c. net
Cocks.
Brass Racking........dis 50 %
Lock and Globe........dis 50 %
Lever Bibbs........dis 50 %
Ale and Beer........dis 40 @ 45 %
Curtain Pins.—Silvered Glass........new list dis 15 %
Cutlery.
Am. Pocket—Humason & Beckley Mfg. Co........dis 25 %
Am. Miller Bro.'s Cutlery Co........dis 25 %
Naugatuck Cutlery Co........list net
Rogers Cutlery Co........net
Dippers.
Britannia........per doz $3·75 @ $4·25 net
Cocoa, Plain........per doz $3·25—dis 20 %
" Rimmed........per doz 3·75—dis 20 %
Dog Collars.
Embossed Gilt........dis 20 %
Leather........dis 30 %
Brass........dis 25 %
Door Springs.
Torrey's Rod........₩ doz $2·10 @ $2·20 net
Gray's "........₩ doz $2·00 @ $2·15 net
Johnson's "........₩ doz $3·00 net
Gem (Coil)—
No. 1, Large, Japanned........per doz $3·50 }
No. 2, Medium, "........per doz 2·50 } dis 10 %
No. 3, Small, "........per doz 2·00 }
Challenge (Coil)— Nos. 8 7 6
Japanned........per doz $2·00 2·50 3·50 }
Coppered........per doz 4·00 4·50 5·00 } dis 10 %
Galvanized........per doz 3·50 4·00 4·50 }
Nickeled........per doz 5·50 6·00 7·00 }
Premium (Coil)— Nos. 1 2 3
Japanned........Per doz $7·50 6·25 5·00 } dis 30 %
Nickeled........Per doz 11·00 9·50 8·00 }
Star (Coil)—(For Cop'd, Nickel Plated, &c., see list.)
No. 5, Small........per doz $2·00 }
No. 6, Medium........per doz 2·50 } dis 15 %
No. 7, Large........per doz 3·50 }
Philadelphia........5 in., $5·00; 8 in., $7·00 dis 25 %
Barker's Concealed........dis 15 %
Drawing Knives.
Crossman's No. 1........dis 60&5 %
D. R. Barton Tool Co........dis 20 %
Hart Mfg. Co., No. 1........dis 60&10&10 %
Merrill........dis 60&10 %
Nobles Mfg. Co........dis 15 %
Bradley's........dis 25 %
Adjustable Handle........dis 20 %
Witherby Tool Co........dis 60&10 %
Drills and Drill Stocks.
Blacksmiths'........each $2 50 dis 10 %
" Self-Feeding........each $7 50 dis 10 %
Breast, P. S. & W........dis 25 %
Breast, Aiken's........dis 25&10 %
" Hotchkiss........dis 10 %
" Wilson's........dis 10 %
" Miller's Falls........each $2·50, dis 25 %
Ratchet, Merrill's........dis 20 %
" Ingersoll's (old list)........dis 35 %
" Whitney's........dis 20 %
" Weston's........dis 20 %
" Moore's Triple Action........dis 20 @ 25 %
Wilson's Drill Stocks........dis 10 %
Automatic Boring Tools........each $3·75, dis 20 %

Drill Chucks.
Danbury........each $8·00, dis 30 %
Morse's Beach Patent........dis 30 %
" Adjustable........each $10·00, dis 30 %
Egg Beaters.
Dover........₩ doz $5·00—dis 20 %
National........₩ doz $4·50—dis 33⅓ %
Emery.
Genuine Chester—Regular Nos........₩ lb 6c } dis 10 %
" Flour and FF........₩ lb 4c }
Washington Mills—Regular Nos........₩ lb 8c
" Flour........₩ lb 5c
Wellington Mills, Grain........₩ lb 10c. net
" " Flour........₩ lb 8c. net
Enameled and Tinned Ware.
Kettles........dis 40 @ 50 %
Sauce Pans........dis 30 @ 35 %
Glue Kettles........dis 30 @ 35 %
Tinned Saucepans........dis 30 @ 35 %
Escutcheons.
Door Lock........Same discounts as Door Locks
Brass Thread........dis 60&10 %
Wood........dis 25 %
Faucets.
Fenn's........dis 50 %
" Cork Stops........dis 40 %
Star........dis 55&10 %
Frary's Patent Petroleum........dis 20&10 %
Wood and Metallic........dis 40 %
Wood, Cork Lined........dis 65&10 %
Enterprise Mfg. Co., Self-Measuring........dis 20 %
Felloe Plates.........₩ lb 15c; dis 40&10 %
Files.
American File Co........$5 00 to £ currency—dis 30 %
Arcade File Works........$5·00 to £ currency
Auburn File Works........$5 00 to £ currency
C. B. Paul's........$5 00 to £ currency
Heller & Bros........$4 50 to £ currency
Hiscox File Mfg. Co........$5 00 to £ currency, dis 15 %
Johnson & Bro........$5 00 to £ currency
Madden & Cockayne File Co........$5 00 to £ cur., dis 15 %
Jowitt's........4 50 to £ gold
J. & Riley Carr........5 00 to £ gold
Stubs'........7 50 to £ gold
Butcher's........4 80 to £ gold
Walter Spencer & Co.'s "Diamond"........4 50 to £ gold
Fisher's........4 75 to £ gold
Moss & Gamble........4 75 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 4 50 to £ gold
" " Horse Rasps........5 00 to £ gold
H. Disston & Sons........dis 30 %
Limet & Co. (French)........4 25 to £ gold
Boyton's Cant........dis 40 %
Fluting Machines.
Mrs. Coles'........5 in., $6·00; 7 in., $7·00, dis 25 %
" Pony..4 in., $4·75; 5 in. $5; 6 in. 5·50; 7 in. $6 dis 25 %
Mrs. Knox, No 1876........each $5·20, dis 30&10 %
Knox Imperial, 1877........$5·20; dis 20&10 %
Knox, 4 inch Rolls........$3 25 each dis 10 %
" 6 "........3 80 each dis 10 %
" 8 "........5 60 each dis 10 %
Peerless, 4-inch Rolls........4 00 each net
" 5 " "........4 75 each net
Improved Knox (Climax), 4 inch........2 65 each net
" " " 6 "........3 15 each net
" " " 8 "........4 90 each net
Champion, 6 inch rolls........6 00 each net
" 4 inch rolls........5 00 each net
Empire........4 00 each net
Eureka, No. 1, 7-inch Roll........6 75 each net
" No. 2, 5-inch Roll........5 00 each net
Defiance......4 in., $3·50; 6 in., $4·00; 8 in., $6·50 each net
K. F. M., 4½-inch Roll........3 50 each net
" 6-inch Roll........4 00 each net
Crown...4½ in. Roll, $3·25; 6 in., $3·50; 8 in., 5·00 each net
Domestic Fluter........$1·50 each net
Geneva Hand Fluter........$15 00 per doz net
Fluting Scissors.........dis 40&5 %
Forges.
Empire" (W. P. Kellogg & Co.)........dis 30 %
Keystone Portable Forge Co........dis 20 %
Forks.
Hay, Manure & Spading........dis 35 %
Plated A 1........dis 40&5 %
" Reed & Barton........dis 40&5 %
Fruit and Jelly Presses.
Enterprise Mfg. Co........dis 20 %
Fry Pans.
Burnished, P. S. & W., new list........dis 55 %
₩ doz.....$3·00 3·75 4·25 4·75 5·25 6·00 7·00 8·00 9·00
No. ... 0 1 2 3 4 5 7 8
Gauges.
Marking........dis 45&10 %
" Star........dis 35 %
Wire........dis 10 %
" Smith's Patent........per doz $18·00, dis 40 %
Gimlets.
Nail and Spike........dis 40 %
"Bee" Gimlets........per gross, $12·00, dis 45 %
"Eureka" Gimlets........dis 40 %
Double Cut, Shepardson's........dis 20 %
" " Hartwell's........dis 40 %
" " Ives'........dis 33⅓ %
" " Douglass'........dis 25&10 %
Glue Pots.
Tinned and Enameled........dis 35 %
Family, Howe's "Eureka"........dis 25 %
" L. F. & C.'s "Handy"........dis 25 %
Grind Stone Fixtures
Sargent's Patent........dis 70&10&10 %
Reading Hardware Co........dis 70&10 %
Hart Mfg. Co.'s........dis 60&5&10 %
Rick Bros........dis 45&5 %
Hammers.
Emmet Hammer Co.'s Handled........dis 25 %
" Sledge & Stone.₩ lb 10c.; dis 40 %
Humason & Beckley Mfg. Co........dis 33⅓ %
Maydole's........New List, Jan. 1, '77, dis 10 %
Henry Hammonds'........new list Jan. 1, 1877. dis 15&5 %
Cheney's, Steel Face and Claw........dis 10 %
" all steel........dis 20&10 %
Verree........dis 5 %
Magnetic Tack........dis 25&10 %
Warner & Noble's........dis 10 %
Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair } dis 25 %
" Leg Irons $6 50 per pair }
Providence Tool Co.'s Hand Cuffs..$15 per doz } dis 10 %
" " Leg Irons 25 " }
Handles.
Door or Thumb Latches—
Nos. 0 1 2 3 4
Per doz $0·80 1·00 1·18 1·35 1·50—dis 60&10 %
Roggin's Latches........35c. @ 40c. net
Bronzed Iron Drop Latches........per doz $1·00 @ 1·25 net
Wrought Chest........dis 60&10 %
Surface Chest, Sargent's list........dis 60&10&10 %
Flush Chest........dis 60&10&10 %
Lifting........dis 60&10 %
Saw and Plane........dis 25&10 %
Boynton's X Cut (Loop)........dis 20 %
" X Cut (Centennial)........dis 15 %
Hammer and Hatchet........dis 10 %
N. Carolina Handle Co........dis 15 %
Brad Awl........per gross $3 75, dis 25&10 %
Hickory Firmer Chisel, ass'td " 5 25 }
" " " large " 6 50
Apple " " ass'td " 6 00
" " " large " 7 50
Socket " " ass'td " 4 50 } dis 40 %
" Framing " " " 7 00
File........ " " 3 50
Auger........ " " 6 00
"........ large " 7 00 }
Patent Auger, Ives'........dis 25&10 %
" " Douglass'........per set $1 25—dis 10 %
" " Swan's........per set $1 00—dis 30&10 %
Hangers.—Barn Door........dis 70&10 %
"Anti-Friction" No. 1, $1·25; No. 2, $1·50 ₩ pr. dis 40&10 %
Novelty........dis 40 %
Challenge........dis 50 %
Climax........dis 40 %
Harness Snaps.
Henshaw's......List of 1⅛ changed to $14·00, dis 42½ %
Judd's........ " " 14·00, dis 50 %
Fitch's (Bristol) " " 14·00, dis 45 @ 50 %
Hotchkiss'........dis 10 %
Andrews'........dis 45 %
Sargent's........dis 60&10 %
New York Wire........dis 30&20 %
"German"........dis 60 %
Hatchets.—Isaiah Blood........dis 15 %
Shingling, Nos. 1 2 3........₩ doz $7 25 8 00 8 75
Claw, " 1 2 3........₩ doz 7 75 8 50 9 25
Lathing, " 1 2 3........₩ doz 7 50 8 00 8 50
Hunt's........dis 25 %
Shingling, Nos. 1 2 3........₩ doz $7 25 8 00 8 75
Claw, " 1 2 3........₩ doz 7 75 8 50 9 25
Lathing, " 1 2 3........₩ doz 7 50 8 25 9 00
Hurd's........dis 30&5 %
Shingling, Nos. 1 2 3........₩ doz $8 00 8 50 9 00
Claw, " 1 2 3........₩ doz 9 00 9 50 10 00
Lathing, " 1 2 3........₩ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s........dis 25 %
Shingling, Nos. 1 2 3........₩ doz $6 50 7 00 7 50
Claw, " 1 2 3........₩ doz 7 25 7 75 8 25
Lathing, " 1 2 3........₩ doz 6 50 7 00 7 50
Simmon's........dis 25 %
Shingling, Nos. 0 1 2 3....₩ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3....₩ doz 9 00 9 50 10 00
Lathing, " 1 2 3....₩ doz 8 00 8 50 9 00
Broad, " 1 2 3....₩ doz 9 00 10 00 12 00
" " 4 5 6....₩ doz 14 00 16 00 18 00
" " 7 8....₩ doz 20 00 22 00
D. R. Barton Tool Co........dis 20 %
Shingling, Nos. 1 2 3........₩ doz $11 00 10 50 10 00
Lath, " 1 2 3........₩ doz 10 50 10 00 9 50
Half Hatchets, Nos. 1 2 3...₩ doz 11 00 10 50 10 00
J. P. Verree & Co........dis 5 %
Shingling, Nos. 1 2 3........₩ doz $7 30 7 50 8 00
Claw, " 1 2 3........₩ doz 7 50 8 00 8 50
Lathing, " 1 2 3........₩ doz 7 00 7 50 8 00
Underhill's........dis 20 %
Shingling, Nos. 1 2 3........₩ doz 7 25 8 00 8 75
Claw, " 1 2 3........₩ doz 7 75 8 50 9 25
Lathing, " 1 2 3........₩ doz 12 00 11 00 13 00
M. H. Jones & Co........dis 25 %
Shingling, Nos. 1 2 3........₩ doz $8 00 8 50 9 00
Half Hatchets, Nos. 1 2 3...₩ doz 8 00 8 50 9 00
Claw, Nos. 1 2 3........₩ doz 9 00 9 50 10 00
Lathing, " 1 2 3........₩ doz 8 00 8 50 9 00
Broad, " 2 3 4........₩ doz 11 00 13 00 14 50
" " 5 6 7........₩ doz 16 50 18 00 19 50
Empire Hatchets, M. H. Jones & Co........net
Shingling, Nos. 1 2 3........₩ doz $4 75 5 00 5 25
Lath, " 1 2 3........₩ doz 4 75 5 00 5 25
Half Hatchets, Nos. 1 2 3........₩ doz 4 25 5 00 5 25
All pol. Sh'gling " 1 2 3........₩ doz 5 25 5 50 5 75
Solid Steel Lath " 1 2 3........₩ doz 7 25 7 50 7 75
Hay Knives.—"Lightning"........per doz $40·00 net
Wadsworth's........dis 30 %
Hinges.
Gate, Western........₩ doz $6·25—dis 60&10 %
" N. E........₩ doz 10·13—dis 60&10 %
Gate, N. Y. State........₩ doz 7·20—dis 60&10&10 %
Gate, Clark's No. 1........per doz $6·00 dis 45 %
Rolled Plate........dis 60&10 %
Rolled Raised........dis 60&10 %
Wrought Strap and T........dis 60&5 %
Providence Plate. { 6 to 10 in. 11c ₩ lb / over 10 in. 9½c ₩ lb } .... dis 40&10 %
Screw Hook and Strap.... { 8, 10, 12 in. 11 c / 14 to 36 in. 9½c } dis 40&10 %
Heavy Welded Hook.... { 8 to 12 in., 11 c / 14 in. & up, 9½c }....dis 30 %
Screw Hook and Eye........ { ⅝ to 1 in., 11c / ½ in. 12½c / ⅜ in. 13c }....net
Hoes.
Solid Shank, C. S........₩ doz $8 00—dis 40 %
Socket........₩ doz 9 00—dis 40 %
Riveted Eye........₩ doz 4 75—dis 40 %
Grub........dis 30 %
Planters........dis 25&10 %
Scovill Pattern........dis 30 %
Planters', Handled........dis 25 %
Scovill Pattern, Handled........dis 25 %
Hooks.
Bird Cage, Sargent's list........dis 60&10 %
Cotton........dis 50 %
Belt........dis 60&10 %
Bench—Hotchkiss' $5 00 ₩ doz........dis 10 %
" Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" McGill's........$3 00 per doz, dis 10 %
" Skinner's........per doz $6·25, dis 20 %
Clothes Line, Hart's list........dis 60&10&5&10 %
" " Sargent's list........dis 60&10&10 %
" " Reading list........dis 33⅓&5&10 %
Ceiling.. / Harness.. { Hart's list........dis 60&10&10 %
{ Sargent's list........dis 60&5&10 %
{ Reading list........dis 40&10 %
Coat and Hat, Hart's list........dis 60&10&10 %
" " Sargent's list........dis 60&10&10 %
" " Reading........dis 40&10 %
Wrought Staples and Hooks and Staples........dis 75 %
" " Stanley's list........dis 40 %
Wire Screw Hooks and Eyes........dis 65&10&10 %
Grass........dis 30 %
Whiffletree—Patent........dis 45 %
Hooks and Eyes—Malleable Iron........dis 60&10&10 %
" " Brass........dis 60&10&10 %

Horse Nails.	Nos. 5	6	7	8	9	10
Ausable........₩ lb	30c	27c	25c	24c	23c	22c
" P't'd & Pol'd.. "	31c	28c	26c	25c	24c	23c
" " & Blued.. "	31c	28c	26c	25c	24c	23c
Cortland........ "	29c	26c	24c	23c	22c	21c
Buffalo Forged........ "	31c	28c	26c	25c	24c	23c
Globe, P't'd & Pol'd... "	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin... "	28c	25c	23c	22c	21c	20c
National, Pointed and Polished. Ex. Fin.... "	30c	27c	25c	24c	23c	22c
Perkin's P't'd—Black. "	26c	23c	21c	20c	19c	18c
Perkins' Pointed and Polished........ "	27c	24c	22c	21c	20c	19c
Perkins' Pointed and Blued........ "	27c	24c	22c	21c	20c	19c
Putnam Hammer P't'd "	32c	28c	26c	25c	24c	23c
Vulcan, P't'd & Blued. "	31c	28c	26c	25c	24c	23c

Star Brand, 16c.; Morgan........14c
Putnam........500 lbs., dis 5 %
Ausable, National and New London........1000 lbs., dis 5 %
Perkins' and Vulcan........1000 lbs., dis 7½ %
Perkins', Vulcan and Globe........500 lbs., dis 5 %
Horse Shoes.
Burden........₩ keg, $3·92½
R. I. Horse Shoe Co., Perkins' Improved Light, Med. and Heavy........₩ keg, 3·92½
Mule Shoes........₩ keg, 4·92½
Perkins' Snow........₩ keg, 4·92½
The Boston Horse Shoe........per keg $5·00
Boston Rolling Mills Hand Made........₩ lb 8c
Ice Awls, Chisels, &c.
American Ice Chisel........per doz $6·50 net
National " "........per doz $6·50, dis 10 %
Novelty Ice Breakers........per doz $6·50, net
White's Sliding Head Picks........per doz $2·50, dis 25 %
Dunlap's Ring Picks........per doz $3·00, dis 25 %
Wood Head Picks, Sargent's........per doz $1·85, dis 60&10 %
Iron " " "........per doz $1·85, dis 60&10 %
Ice Mallets, Pick in Head........per doz $1·75 net
" " Pick in Handle........per doz $3·00 net
Ice Axes Small, Cast or Malleable........per doz $1·50 net
Kettles.
Brass........₩ lb 45c net
Enameled........dis 55 %
Knives.
Ames' Butcher Knives........dis 20 %
" Shoe "........dis 15 %
" Bread "........₩ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's"........dis 30 %
Table and Pocket........See Cutlery
Knobs.
Carriage (Jap'd 80 cents per gross)........dis 60&10 %
Base—Common........dis 30&10 %
" Plush Tip........dis 10 %
" Elastic End, No. 8........dis 60&5 %
Door, Mineral........₩ doz $1·75 }
" Por. Jap'd........₩ doz 2·25 } ....dis 35 %
" " Plated........₩ doz 6·25 } & 2 % for cash
" " Por........₩ doz 6·75 }
Furniture, Plain........75c gross inch, dis 10 %
" Wood Screws........dis 20 %
Ladles.
Melting, Hart's........dis 55&10 %
" Sargent's........dis 50&10 %
" Reading........dis 15&10 %
" Monroe's Patent........per doz $4·00 dis 20 %
Lanterns.
Tubular........No. 0, $11·00; No. 1, $14·00 / With Guards, 50c. extra } dis 5 @ 10 %
Peerless........No. 5, per doz $11·75—dis 10&10 %
Brady's Patent........dis 10&10 %
Ætna........dis 10 & 10 %
Yankee........dis 10 & 10 %
De Beque........dis 10 & 10 %
Police........small, $7·50; large, $9·00, dis 5 %
Lard Presses.
Draw Cut, 14 inch........each $65 00—dis 20 %
Enterprise Mfg. Co........dis 20 %
Lemon Squeezers.
Porcelain Lined........per doz $7 00, dis 15 %
Eureka, Tinned........per doz, $4·00 dis 10 %
Dunlap's Improved........per doz $6·00 net
Sammis Patent........per doz $4·50 dis 10 %
Lines.
Linen Fish........dis 20 %
Cotton Chalk........dis 50 %
Sil. Lake Chalk........Nos. 0, 1, 2, 3, $6, 6·50, 7, 7·50, dis 20 %
Mason's........dis 20 %
Wire Clothes, Gal'd........each 50c. net
Locks and Latches.
Cabinet—Gaylord / " Eagle } ....dis 25&5&2 %
Trunk........dis 25 %
Langstroth & Crane's, List Jan. 1, '77.
Round Key........dis 40&10 %
Flat Key........dis 33⅓&10 %
Barnes & Deitz, Flat Key........dis 25 @ 30 %
Yale Lock Co., Flat Key........dis 40 %
Sargent & Greenleaf, Flat Key........dis 20 %
Continental........dis 25 %
Shepardson's, Flat Key........dis 35 %
American Lock Mfg. Co........dis 33⅓ %
Plate........new list dis 33⅓&2 %
Trenton / Branford / Norwich / Russell & Erwin / Norwalk / Nashua / Mallory, Wheeler & Co. / P. & F. Corbin / Parker & Whipple / Jacobus & Nimick Mfg. Co. } List of Jan. 1, 1877........dis 35 % ....and 2 % for cash
Padlocks, Russell & Erwin / " Mallory, Wheeler & Co. / " Wm. Wilcox & Co. } ....dis 33⅓&5 % ...and 2 % for cash
" American Lock Mfg. Co........dis 33⅓ %
" Romer's........dis 15 %
" Vulcan Hardware Co........dis 20 %
" New York Lock Co........dis 20 %
" J. H. McWilliams........dis 5 @ 10 %
" Barnes & Deitz........dis 25 %
" Miller's Patent........dis 40 %
" Penn Lock Works........dis 33⅓ %
" " " " (Scandinavian)........dis 50 %
Mallets.—Hickory and Lignumvitae........dis 20 %
Meat Cutters.
Dixon's (P. S. & W.).Nos. 1 2 3 4
₩ doz. $14 00 $17 00 $19 00 $30 00 dis 25 %
Miles Challenge........Nos 1 2 3
₩ doz. $22·00 $30·00 $40 00—dis 30 %
Perry's..Nos. 1 2 3 4 4 g'rd 5 g'rd
Each $3·00 $4·00 $5 00 $11·00 $13·00 $35·00—dis 40 %
Woodruff's (P. S. & W.)........Nos. 100 150
₩ doz. $15·00 $18·00—dis 25 %
Hales'........Nos. 11 12 13
₩ doz. $27·00 $33·00 $42·00—dis 40&2 %
Draw Cut..Nos. 5 2 6 8 10
Each $50·00 $75.00 $80·00 $225 00 $400·00—dis 20 %
American........dis 25 %
No. ..... 1 2 2½ 3 4 B 5
Each........$5·00 $7·50 $10·00 $12·00 $25·00 $30·00 $40·00
Molasses Gates.
Stebbins' Pattern........dis 62½&10 %
" Genuine........dis 60&10 %
" Tinned ends........dis 40&10 %
Bush's........dis 20 %
Lincoln's........dis 50&10 %
Weed's........dis 15 %
Mortars and Pestles.
Iron........net
Mortising Machines........each $20·00, dis 20 %
Nail Pullers.
Taft's........per doz $24·00 net
Nails.........See Trade Report
Nuts and Washers.
Square and Hex., New List March 1, '76...7 @ 7½c off list
Oakum.
Best........₩ lb 10½c
U. S. Navy........₩ lb 9½c
Navy........₩ lb 8½c
Oilers.
Zinc and Tin........new list, dis 45 %
Brass and Copper........new list, dis 40 %
Olmsted's........dis 40 %
Broughton's........dis 40 %
Malleable........per doz $5 00 dis 10 %
Prior's Patent or "Paragon"........dis 45 %
Ox Balls.........dis 60&10 %
Pencils.
Faber's Carpenters'........net
" Round Gilt........₩ gross $6 00 net
Dixon's Lead........₩ gross $4·50 net
" Lumber........₩ gross 9·00 net

Picture Cord (Wire).
Tinned (Williams, White & Churchill)........dis 80 %
Lacquered " " "........dis 80 %
Gold Plated " " "........dis 70 %
Picture Nails and Knobs.
Brass Head........Sargent's List, dis 60&10 %
Porcelain Head........Sargent's List, dis 60&10&10 %
Judd's........
Pinking Irons.........per doz $2 75—dis 65&10 %
Plaiting Machines.
Astor Plaiting Machine........each $15·00; dis 20 %
Planes and Plane Irons.
First Quality........dis 35 @ 30&10 %
Second Quality........dis 50 %
Bailey's Patent Adjustable, new list Jan. '77, dis 25&10 %
Bailey's "Victor"........dis 25&10 %
Defiance Adjustable, new list........dis 25&10 %
D. R. Barton Tool Co........dis 20 %
Sandusky........dis 35 %
Ohio Tool Co........dis 35 %
Plane Irons, Butcher's........$5 50 to £ gold—new list
" Buck Bros........$5 25 to £ gold
" Bailey's Patent........dis 25&10 %
" Auburn Tool Co.'s........dis 25 %
" Greenfield Tool Co........net list
Plane Irons, Defiance........new list dis 25&10 %
" D. R. Barton Tool Co........dis 20 %
" Middletown Tool Co........net list
" Ohio Tool Co........dis 10 %
" Spear & Jackson's........5 00 to £ gold
" Sandusky Tool Co........dis 10 %
Plow Bits, Greenfield Tool Co........dis 10 %
Pliers and Nippers.
Button's Patent........dis 33⅓ %
Hull's Patent Nippers..No. 1, $15; No. 2, $21 ₩ doz dis 25 %
Gas Pliers........dis 25 %
Eureka Pliers and Nippers........dis 25 %
Plumbs and Levels.
Stanley R. & L. Co.'s Pat. Adjustable........dis 60&10 %
" " " Non-Adjustable........dis 60&10 %
Chapin's........dis 60&10 %
Standard Rule Co.'s New Adjustable........dis 60&10 %
Standard Rule Co.'s Non-Adjustable........dis 60&10 %
Johnson's Patent Adjustable........dis 60&10 %
Davis' Patent........dis 60&10 %
Pocket Levels........dis 60&10 %
Post Hole and Tree Augers.
Eureka Digger........per doz $40·30, dis 20 %
Pulleys.
Judd's Axle........per doz $0·75 dis 40 %
Hot House and Tackle........dis 60&10 %
Jap'd Screw........dis 60&10 %
Brass Screw........dis 60&10 %
Jap'd Side........dis 60&10 %
" Clothes Line........dis 60&10 %
Hay Fork........per doz $4 50 @ 5 00, dis 10 %
Pumps.
Douglas Cistern, etc........new list dis
" S. & F........new list dis
Union Mfg. Co's. Cistern and Pitcher........dis 35 %
" " " Rams........dis 25 %
" " " Garden Engines........dis 20 %
Punches.
Belt or Drive........per doz $2·00; $2·25; $2·50 dis 30
Spring........per doz $6·50—dis 25&10 %
" Leach's Patent........dis 15 %
" Bemis'........dis 20 %
Rail.
Sliding Door, Wrought Brass........₩ lb 40c. net
" " Iron, Painted........₩ foot 9c—dis 55&10 %
Barn Door, ½, ⅝ and ¾ inch........dis 65&10 %
" " for N. E. Hangers........dis 65&10 %
Rakes.
Cast Steel........dis 35 %
$8 00 9 00 10 00 11 00
8 10 12 14 teeth.
Malleable........dis 40 %
$5 00 5 50 5 50 6 00 6 00 6 50
9 10 11 12 13 15 teeth.
Razor Straps.
Evan's........dis 40 %
Imitation Emerson........₩ doz $2·75—dis 40&10 %
Hunt's........dis 40&5 %
Chapman........dis 10 @ 15 %
Torrey's........dis 20 %
Saunder's........net @ 10 %
Rivets.
Iron and Tinned........dis 40 %
In bulk........dis 30 %
Copper Rivets and Burrs........dis 10 %
Nos. 7 8 9 10 11 12 13 14 15
Per lb. 49c 50c 52c 54c 56c 55c 60c 65c 70c
Rivet Sets.........dis 20 %
Road and Levee Scrapers.
Doty's Revolving........dis 25 %
Rods.
Stair........dis 50 %
" American Patent........dis 33⅓ %
Rollers.
Barn Door........revised list dis 65&10 %
Novelty........dis 10 %
Acme (Anti-friction)........dis 40 %
Rope. Manufacturers' List of April 13, 1877.
Manila........½ inch and larger ₩ lb 14 c
"........⅜ inch ₩ lb 14½c
"........¼ and 5-16 inch ₩ lb 15 c
" Tar'd Rope........₩ lb 13½c
" Tar'd Lath Yarn........₩ lb 15 c
" Hay Rope........₩ lb 14 c
Sisal........½ inch and larger ₩ lb 11 c
"........⅜ inch ₩ lb 11½c
Sisal........¼ and 5-16 inch ₩ lb 12 c
" Hay Rope........₩ lb 11 c

Rules.	Boxwood.	Ivory.
Chapin's	dis 55&10 %	dis 45&10 %
Stanley	dis 55&10 %	dis 45&10 %
Standard	dis 55&10 %	dis 45&10 %
Stephens'	dis 55&10 %	dis 45&10 %
Willis, Thrall & Son	dis 55&10 %	dis 45&10 %

Sad Irons.
From 4 to 10 lbs........₩ lb 3 @ 3½c net
Sad Iron, Nickel Stand attached........₩ lb 3c
Self-Heating........per doz $9·38 @ 9·50 net
" Tailors........per doz $13·75 net
Mrs. Potts........dis 30 %
Sand Paper.
Beader & Adamson's Flint, 00 to 1½...$4 25 ₩ ream }
" " 2, 2½ & 3. 4 75 "
" " Assorted, 4 25 " } dis 15 %
" " Star........₩ ream $3 25
" " Emery...₩ ream $6 50 @ 11 50 }
New England, same list as B. & A. Flint........dis 15 %
H. B. & M. Roman Flint " " "........dis 15&5 %
Sash Cord.
Common........₩ lb 16 @ 18c. net
Patent........₩ lb 23½c. net
Silver Lake, Russia Flax........₩ lb 55c }
" " White Cotton........₩ lb 55c } net
" " Drab Cotton........₩ lb 60c }
Raw Hide........dis 35 %
Sash Locks.
Clark's, Nos. 1, $10·00; No. 2, $8·00 per gross........dis 40 %
Ferguson's........dis 40 %
Norwich........dis 25 %
Walker's........dis 10 %
New England........dis 30 %
Hammond's Window Springs........dis 25 %
Sash Weights.—Solid Eyes........₩ lb 1¾c
Sausage Stuffers or Fillers.
Miles........₩ doz $20—dis 30 %
Perry........₩ doz No. 11, $15; No. 10, $21—dis 30 %
Draw Cut No. 4........each $30 00—dis 30 %
Enterprise Mfg. Co........dis 20 %
Silver's........dis 25 %
Saw Frames........per gross $18 00—dis 15&10 %
Saw Rods........$10 list, dis 10&10 %
Saws.
Spear & Jackson's........$3 50 to £ gold
Disston's Circular........dis 25 %
" Mill........dis 30 %
" Cross Cut........dis 30 %
" Hand, Panel, Rip, &c........dis 20 %
H. W. Peace's Circulars........dis 25 %
" Mill, Gang and Mulay........dis 25 %
" Cross Cut, Wood, Hand, &c........dis 20 %
E. M. Boynton's Lightning, Cross Cuts........dis 50&5 % }
" " One-Man, all lengths........dis 40&5 %
" " Buck Saws (X Bar) ₩ doz $15, dis 40&10 %
" " Billet Webs........per doz $10, dis 40&5 %
" " Pruning........dis 40 % }
Wheeler & Clemson Mfg. Co.'s Hand........dis 15 %
" " " Cross-Cut........dis 30 %
Livingston's Butcher and Kitchen........dis 15 %
Livingston's Framed Wood—
Nos. 101 102 103 104 105 106
Per doz $12·00 10·00 12·00 9·00 9·00 6·00 dis 10 %
Saw Sets.
Boynton's Patent........dis 40 %
Stillman's Genuine........₩ doz $4·25 net
" Imitation........₩ doz 5·25—dis 25 %
Common Lever........per doz $2·00 dis 25 %
Leach's........No. 0, $8·00; No. 1, $15·00 dis 15 %
Nash's........No. 1, $8·50; No. 2, $5·50 dis 20&10 %
Hammer, Hotchkiss........$5·50 dis 10 %
" Bemis & Call's........dis 20 %
" Aiken's Genuine........$13·00 dis 33⅓&10 %
" " Imitation........$7·00 dis 25&10 %
" Bart's Patent Lever........dis 20 %
Scales.
Hatch, Counter........₩ doz $36—dis 33⅓ %
" Tea........₩ doz $15—dis 40 %
Union Platform........$6·00, $7·00—dis 40 %
Turnbull's........dis 20 @ 25 %
Brown's........dis 25&5 %
Fairbanks'........dis 30&5 %
Howe's........dis 30&5 %
Chatillon's Grocers'........dis 25 %
" Eureka........dis 30 %
Universal Family........dis 25 %
Favorite Family........dis 25 %
Scale Beams.
No. 1 300 to 1200 lbs........90c ₩ cwt } dis........40 %
No. 2 " "........75c ₩ cwt }
Scrapers.
Box, 1 Handle........per doz $3·00, dis 10 %
" 2 "........per doz 6·00, dis 10 %
Defiance Box and Ship........dis 25&10 %
Foot........dis 60 & 10 %
Ship (common)........per doz $3 00 net
Ship—Providence Tool Co........dis 10 %
Screw Drivers.
Hart, Bliven & Mead........dis 35&10 %
Douglass Mfg. Co........dis 33&10 %
" " No. 1........dis 30&10 %
Disston's........dis 45 %
Stanley Rule & Level Co., No. 1........dis 35&10 %
" " No. 2........dis 45&10 %
Screws.
Flat H'd Iron, list Sept. 1, '75, R.&E. Mfg. Co........dis 60 %
" " Am. Sc. Co........dis 60 %
Round Head Iron " " "........dis 50 %
Flat Head Brass " " "........dis 55 %
Round Head Brass " " "........dis 40 %

Brass and Silver Capped, List March 1, '75.....dis 40 %
Lag or Common Coach, New List March 1, '76.....dis 65 %
Coach, Patent Gimlet Point, List Jan. 1, 1875..dis 40 @ 50 %
Bed.....dis 10 %
Japanned, List of Plain Screws.....dis 35 %
Machine—Flat Head, Iron, Am. Screw Co.....dis 10 %
Round Head, Iron, " ".....net
Nettlefold's Brass.....dis 60 @ 60&5 %
Bench—Iron.....dis 60, 10&10 %
" —Wood, Beech.....₩ doz $3·00 net
" " Hickory.....dis 20&10 %
Hand.....dis 25&10 %
Hand Rail, Sargent's.....dis 55&10 %
" " Humason, Beckley & Co.'s.....dis 40&5 %
Jack—Bell Bottom.....dis 15 %

Scythes

Blood's German Steel, Grass.....₩ doz $10 00
" Cast " ".....₩ doz 11 00
" Silver " ".....₩ doz 12 00
" German " Grain.....₩ doz 14 00
" Cast " ".....₩ doz 15 00
} dis $1·50 from list

Blood's Excelsior and Granger.....₩ doz 11 00
" Young America.....10 50
" Silver Clipper.....13 00
} dis $1·50 from list.

Wadsworth's Grass.....dis 30 %
" Bush.....dis 20 %
Scythe Snaths.....dis 20 %

Shears and Scissors.

Cast Steel.....dis 75&10 %
Cast Iron.....dis 40 %
Seymour's Straight Trimmers.....dis 60&10 %
" Scissors.....dis 50 %
Pruning.....per doz $5·50 @ 6·00, net
Barnard's Lamp Trimmers.....per doz $3·75

Sheaves.

Sliding Door, M. W. & Co. list.....dis 35&2 %
" R. & E. list.....dis 50&5&2 %
" Patent Roller.....dis 25&2 %
" " " Hatfield's.....dis 50&2 %
Russell's Anti-Friction.....dis 50&2 %
Sliding Shutter, R. & E. List.....dis 50&5&2 %
" " Sargent's List.....dis 55&10 %
Moore's Anti-friction.....dis 33⅓ %

Shovels and Spades.

Ames.....dis 30 %
Rowland's.....dis 30 %
Old Colony.....dis 30 %
Middleboro' Shovel Co.....dis 30 %
Remington's (Lowman's Patent).....dis 30 %
Dunning's Shovels and Scoops.....dis 20&7½ %

Shovels and Tongs.

Iron and Brass Head, R. & E. list.....dis 50&10&2 %
" Hart's.....dis 55&2&10 %
Polished Steel.....dis 50&10&2 %

Slates.

Square Frames, Round Cornered, by case.....dis 70 %
Less than a case.....dis 65&10 %

Spokes.—North Carolina Handle Co.....dis 20 %

Spoke Shaves.

Defiance Metallic.....new list dis 25&10 %
Iron.....dis 33⅓&10 %
Wood.....dis 30 %
Bailey's.....dis 25&10 %

Spoke Trimmers.

Bonney's.....per doz $10·00 dis 40 %
Stearn's.....per doz $10·00 dis 40 %
Ives'.....No. 1, $15·00; No. 2, $12·00 ₩ doz, dis 33⅓&10 %
Douglass'.....per doz $9·00 dis 25&10 %

Spoons.

Tinned Iron.....dis 10 %
By the case.....dis 20 %
Basting.....dis 15 %
Britannia.....dis 55 @ 60 %
" Boardman's, new list.....dis 55 %
Derby Silver Co.....dis 40&5 %
Rogers & Bro., A 1.....dis 40&5 %
Reed & Barton.....dis 40&5 %
Rogers Cutlery Co.....dis 50 %
Holmes, Booth & Haydens.....dis 40&5 %
Nickel Silver Co.....dis 30 %
German Silver.....dis 25&5 %
Tin (P. S. & W.)—
Teas.....$1·50 ₩ gross, net
Tables.....2·75 " net
Tin (Cowles Hdw. Co.).....dis 10 %
" " case lots.....dis 20 %

Stencil Combinations—Stafford Mfg. Co.—

Inch	½	¾	1	1¼	1½	2	2½
Per doz	$6·00	6·50	7·00	9·00	10·00	12·00	18·00

Stocks and Dies......dis 5&10 %

Stone.

Hindostan Stone.....₩ ℔ 6c
" Axe Stone.....₩ ℔ 8c
" Slips.....₩ ℔ 10c
} dis 30 %
Sand Stone.....₩ ℔ 6—dis 30 %
Washita Stone.....No. 1, ₩ ℔ 30c net
".....No. 2, ₩ ℔ 25c net
" Slips.....No. 1, ₩ ℔ 60c net
Arkansas Stone.....No. 1, ₩ ℔ $1·35 net
" Slips.....No. 1, ₩ ℔ $2·50 net
Grindstones, Family, Loring's.....dis 10 %

Stove Polish.

Joseph Dixon's.....₩ gross, $6·00 dis 5 %
Gem.....₩ gross $4·50 dis 5 %
Gold Medal.....₩ gross $6 00 dis 25 %
Rising Sun.....per gross $5·75 net

Squares.

Steel.....dis 50 %; full cases, dis 50&10 %
Iron.....dis 50 %; full cases, dis 50&10 %
Nickel Plated.....add $2 50 @ $4 00 ₩ doz net
Try Squares and T Bevels.....dis 45&10 %
Star Try Squares and Bevels.....dis 35 %
Disston's Try Squares No. 1.....dis 30 %
" " No. 2.....dis 45 %
" " Improved, Nos. 1 & 2.....dis 30 %
Winterbottom's Try and Mitre.....dis 30&10 %

Tacks, Brads, &c.—List of January 1, 1876.

Tacks, Half Weight, American.....dis 75&
" Full ".....dis 50&
" Half " Swedes.....dis 65&
" Full " ".....dis 30&
" Carpet, Am. and Swedes.....dis 10&
" " Leather Head.....dis 10&
" Copper.....₩ ℔ 45c. dis
Brads, Half Weight.....dis 50&
} dis 10 % for cash
Shoe Nails—
4-8ths and longer, 9c.; 3½-8ths, 9½c. ₩ ℔, dis 10 %
Trunk, Clout and Finishing Nails—

⅜	½	⅝	¾	1	1½ in. and over.
25	20	17	15	13	11c. ₩ ℔, dis 10 %

Double Pointed Tacks.....dis 40&5 %

Tap Borers.

Common and Ring.....dis 25&10 %
Ives' Tap Borers.....dis 10&10 @ 25 %
Enterprise Mfg Co.....dis 20 %

Tapes, Measuring.

American Flask and Cap Co.....dis 20 %
Eddy's.....dis 20 %

Tea Trays.

American Tea Tray Co.....dis 15 %

Thermometers.

Tin Case.....dis 60&10 %

Tobacco Cutters.

Enterprise Mfg. Co. (Champion).....dis 20 %
Wood Bottom.....per doz $12—dis 30&10 %
All Iron.....per doz $17·50—dis 40&5 %
Nashua Lock Co.'s.....per doz $18 00—dis 50 %

Toe Calks.

Winsted.....₩ ℔ 10c., dis 5 @ 7½ %

Tinners' Tools and Machines.

P. S. & W.....dis 10 %

Traps.

Game, Newhouse.....dis 25&2 %
" Peck, Stow & Wilcox.....dis 45 %
" Hotchkiss.....old list dis 45 %
" Blake's Patent.....dis 40 %
Mouse, Wood Choker.....₩ doz holes, 15 @ 16c
" Patent Choker (Union Nut Co.).....₩ doz holes 16 @ 18c net
" Round, Wire.....₩ doz $1 50 to 2 00 net
" Square, ".....₩ doz 2 00 to 2 50 net
" Cage, ".....₩ doz 2 50, dis 10 %
" Patent Self Setting.....per doz holes 25c net
" Catch-em-alive.....₩ doz $4·00 net

Trowels.

Lothrop's Brick and Plastering.....dis 10 %
Disston's Brick and Plastering.....dis 20 %
Peace's Plastering.....dis 20 %
Rose's Brick.....dis 5 %
Brades' Brick.....gold. dis 10 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 25 %

Triers.

Butter and Cheese.....dis 25 %

Ventilators (Window).

Nickel and Gilt.....per dozen $16·00 @ 18·00

Vises.

Solid Box, Trenton.....40 to 160 lbs., 12½c. net
" " Wilson's.....30 to 160 lbs., 18c; 160 and over, 22c } dis 33⅓ %
" " Peter Wrights.....16c gold
Parallel, Parker's.....dis 20 %
" Wilson's.....dis 30&10 %
" Sargent's.....dis 55&10 %
" Trenton.....dis 20 %
" Backus and Union.....dis 25 %
" Merrill's.....dis 15 %
" Fisher & Norris.....dis 15&10 %
" Buffalo.....dis 25 %
" Stevens'.....dis 25 %
" Simpson's Adjustable.....dis 25 %
Saw Filers, Bonney's.....per doz $20·00 dis 25 %
" Stearn's.....per doz $20·00 dis 25 %
" Hopkins'.....per doz $17·50 dis 10 %

Wheel Barrows.

Canal (Pugsley & Chapman).....new list dis 30 %
Coal, Garden and Stone (Pugsley & Chapman).....dis 30 %
Jacob's Pat. Self-Oiling R. R. and Canal.....dis 25 %

Well Wheels.—Revised list.....dis 60&10 %

Wire.

Brass and Copper.....List of Jan. 1, 1877, dis 10 %
Bright and Annealed.....Nos. 0 @ 18 dis 52½ @ 55 %
".....19 @ 26 dis 57½ @ 60 %
".....27 @ 36 dis 60 @ 62½ %
Coppered.....0 @ 18 dis 47½ @ 50 %
Galvanized, Nos. 0 to 6.....₩ ℔ 8c net
Galvanized, Nos. 7 to 18.....market list dis 25 %
Tinned Nos. 0 to 18.....dis 32½ @ 35 %
Cast Steel.....dis 20 @ 25 %
Tinned Broom Wire, Nos. 18 to 25.....dis 42½ @ 45 %
Galvanized Telegraph, Nos. 8 and 9.....₩ ℔ 9c
Galvanized Telegraph, Nos. 10 and 11.....₩ ℔ 10c
" " 12.....₩ ℔ 10½c
Annealed Fence, Nos. 8 and 9.....dis 55 %
" Grape, " 10 to 14.....dis 55 %
Fence Staples.....₩ ℔ 7 @ 7½c
Fence Staples Galvanized.....₩ ℔ 10c
Stubs' Steel Wire.....$7 00 to 8 gold
Japanned Barb Fence.....₩ ℔ 15c
Galvanized ".....₩ ℔ 18c
Steel Music Wire, Nos. 12 to 27.....₩ ℔ 10c
Judd's Picture Wire.....dis 50 %
Clothes Line Wire, Galvanized.....per coil 45 @ 50c. net

Wrenches.

American Adjustable.....dis 45 %
Baxter's Adjustable "S" New List, May 1, '76.....dis 20 %
" Diagonal " ".....dis 20 %
Collins & Co.'s.....dis 45 %
Coes' Genuine.....dis 50 %
" Pattern (Wrought).....dis 50&10 %
" " (Malleable).....dis 75 %
Hull & Belden's "Climax".....dis 25 %
Knight's Patent.....dis 25 %

Lindsay's Patent.....dis 25 %
Taft's Pattern.....dis 75&10 %
Davis Patent Duplex.....new list dis 25 %
Bemis & Call's Patent Combination.....dis 20&5 %
" " Merrick's Pattern.....dis 25&2½ %
" " Brigg's Patent.....dis 20&5 %
Aiken's Pocket (Bright).....$8·00, dis 40 %

Wringers. Per doz.

Universal, without Cog Wheels.....$54·00
" with Cog Wh'ls, No. 2½, small fam'y size 63·00
" " " No. 2, usual " 66·00
Crown No. 2.....57·00
" No. 3.....69·00
Climax No. 2.....$71·00
" No. 1½.....79·00
XXX Universal No. 2.....71·00
" No. 1½.....79·00
} Less $2·00 per doz. for cash before shipment.
Household, no Cog Wheels.....54·00
Sherman, " ".....54·00
Eureka, " ".....60·00
Reliance, with ".....63·00
Novelty, No. 10, with Cog Wheels.....63·00
" No. 2, " ".....66·00
" No. 22, " ".....70·00
Excelsior, No. A, with folding bench.....84·00
" No. E, for set tubs.....72·00

Stamped Tin Ware.

Common Stamped Ware.....dis 20 %
Stamped Deep and Retinned Ware.....dis 33⅓ %
Japanned Tin Ware.....dis 5 %
Planished Tin Ware.....dis 20 %

METALS.

IRON.—DUTY Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.

Foundry No. 1.....₩ ton, $19 00 @ 20 00
Foundry No. 2.....18 00 @ 18 50
Gray Forge.....18 00 @

SCOTCH.

Glengarnock.....25 00 @ 26 00
Eglinton.....24 75 @ 25 00
Carnbroe.....
Coltness.....27 25

Bar Iron.

Am. Refined, at mill.....2·10c @ 2·25c.

Rails.

Iron, at mill.....₩ ton $35 00 @ 38 00
Steel, ".....49 00 @ 50 00
Old Rails.....19 00 @ 20 00

Scrap.

Wrought Scrap, from yard.....25 00 @ 26 00

Bar Iron from Store.

Common Iron.
¾ to 2 in. round and square.....
¾ to 6 in. x ⅜ to 1 in.....
} ₩ ℔ 2·1c
Refined Iron
¾ to 2 in. round and square.....
1 to 6 in. x ⅜ to 1 in.....
} ₩ ℔ 2·3c
1 to 6 in. x ¼ and 5-16.....₩ ℔ 2·5c
Rods—⅝ and 11-16 round and square.....₩ ℔ 2·4c
Bands—1 to 6 x 12 to 3-16.....₩ ℔ 2·7c
Swedish Iron.
Ordinary sizes.....130 00 @ 132 50
Plow size.....

Sheet Iron.

	Common American.	R. G. American.
Nos. 10 to 20.....₩ ℔	3½	4½c
21 to 24..... "	3½c	4½c
25 to 26..... "	3¾c	5 c
27..... "	4 c	5 c
28..... "	4 c	5½c

Galvanized, 14 to 20, prime, ₩ ℔ 7½c; 2d quality ₩ ℔ 6½c
" 21 to 24 " " 8½c " " 7 c
" 25 to 26 " " 9 c " " 7½c
" 27 " " 9½c " " 8 c
" 28 " " 10½c " " 8½c
Patent Planished.....A, 11c.; B, 9½c. ₩ ℔
Russia, Nos. 8 to 16.....₩ ℔ 12½ @ 13c
" Stained, No. 1.....12c
Am. Cold Rolled.....4½c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

⅜	5	5½	6	7 inch.
$2·50	3·50	4·50	5·25	6·50 per doz.

RUSSIA IRON.

1½	5	5½	6	7 inch.
5·00	7 00	9·50	12·00	14·00 per doz.

COPPER.—DUTY. Pig, Bar and Ingot 5c.; old copper, 4 cents ₩ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem.
American Ingot.....₩ ℔ 20 @ 20½c
English

SHEATHING, BRAZIERS COPPER, BOLTS, &C.

Braziers Copper, ordinary sizes, over 16 oz., per square foot.....32c ₩ ℔
Braziers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot.....34c. "
Braziers' Copper, 12 oz. per square foot.....36c. "
Circles less than 84 inch in diameter.....35c
Circles, 84 inch diameter and over.....38c. "
Segment and Pattern Sheets.....35c. "
Locomotive Fire Box Sheets.....32c.
Sheathing Copper, over 12 oz. per sq. ft.....31c. "
" 12 oz. ₩ sq. ft. and lighter.....36c. "
Bolt Copper.....32c. "
Copper Bottoms, 32c. ₩ ℔.....net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.
Sheathing Copper, tinned on one side, by the case.....6c. ₩ sheet
For less than a case.....8c ₩ sheet
Tinning Sheets, ordinary sizes.....2½c. ₩ sq. ft
For tinning both sides double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier.....37c. By the case, 36c. ₩ ℔
12 oz. and lighter.....40c. " " 39c. "

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier.....39c. By the case, 38c. ₩ ℔
(And all sizes not over 20 inches wide.)

30x60

14 and 16 oz. and heavier.....41c. ₩ ℔
12 oz.....44c. "

Brass.

Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.

January 1, 1877.

Cash prices for Roll and Sheet Brass. For less quantity than 100 pounds, add 3 cents per pound.

HIGH BRASS

All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in.....30c.
All Nos. to No. 28, inclusive, and widths over 14 to 30 in., inclusive.....34c
All Nos. to No. 28, inclusive, and widths over 30 to 30 in. inclusive.....37c
½c. ₩ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at.....50c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in.....37c
Printers' Rules.....44c
Sheets wider than 30 in. and under 40 in.....45c
" " " 40 in. and over.....47c
Circular sheets, in diam. from 4 in. to 14, inclusive.....41c
" " " over 14 " 20, ".....45c
" " " " 20 " 30, ".....48c
" " " " 30 " 40, ".....51c
" " " " 40 in.....54c

LOW BRASS.

Four cents ₩ ℔ more than High Brass.
Gilding Metal 8c, ₩ ℔ more than High Brass.
Platers' or Gold Metal { In Bars.....46c; Sawed.....49c; Planed or Polished.....52c }

FOR SLITTING.

Metal in width 2 in. to ½ in. to No. 28, inclusive, per ℔. advance.
Metal, in width 2 in. to 1 in., thinner than No. 28, 2c. per ℔. advance.
Metal, in width 1 in. to ½ thinner than No. 28, 3c. per ℔. advance.
Metal, in width ½ in. to ¼, inclusive, not thinner than No. 28, 2c. per ℔. advance.
Metal, in width ½ in. to ¼ thinner than No. 28, 5c. per ℔. advance.
Metal, ¼ in. in width and less, 10c. per lb. advance
Any of the above widths cut to particular lengths, add 7c. per pound.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 in., to No. 26	$0·60	$0·85
6 " " "	·68	·96
10 " " "	·84	1·15
15 " " "	1·04	1·40
18 " " "	1·16	1·55

German Silver Sheets over 12 in. wide, and weighing more than 16 ℔s., $2·25 per ℔.
Advance 3c. for each additional in., in width above 12 in., and 3c. per ℔. on each No. thinner than Nos. 26 to 36 inclusive.
Al. German Silver thinner than No. 36 is Platers' at 50c. per ℔. additional.
German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Cop'r.
No. 0 to 20	$0·34	$0·38	$0·45
No. 21	·35	·39	·46
No. 22	·36	·40	·47
No. 23	·37	·41	·48
No. 24	·39	·43	·50
No. 25	·42	·46	·53
No. 26	·44	·48	·55
No. 27	·46	·50	·57
No. 28	·49	·53	·60
No. 29	·52	·56	·63
No. 30	·55	·59	·69
No. 31	·59	·63	·75
No. 32	·63	·67	·81
No. 33	·67	·71	·90
No. 34	·71	·75	1·00

Spring Wire 2c. per ℔. advance.
Flat, Square and Half Round Wire, 5c. per ℔ advance on Round Wire.
Fancy Wire not less than 10c. per ℔. advance of Round Wire.
Brass Rods, No. 8 and larger, not less than 2 feet lengths, 40c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 40c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per ℔. extra for spooling on 1 ℔. spools.

MISCELLANEOUS.

Common Plain Brass Pail Ears.....$0 44
Brass Door Rail.....·45

SCRAP.

High Brass Scrap, 16 cents.
Low " 18 cents.
Gilding, 20 cents.
Turnings, Filings and Chips the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUB. NO. ₩ ℔
Plain to No. 20 inclusive, above ¼ in. to 3 in.....$0 40
" above 3 in.....·50
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26 special rates.
Plain ⅛ inch.....·78
" 3-16 ".....1·10
" ¼ ".....1·60
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20.....48c
English, Scotch and Extra Patterns Fancy Tubing to No. 20.....53c
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under two feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.

Plain.....·28
Fancy.....·31
Scotch and Extra Patterns.....·34

GERMAN SILVER TUBING.

4 Per cent.....·85
6 ".....·95
9 ".....1·10
12 ".....1·25
15 ".....1·40
16 ".....1·45
18 ".....1·55
20 ".....1·58

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

Tool.....15 @ 16c
Spring.....10c
Homogeneous.....12½c
Tire.....12¼ @ 13½c
Machinery (round and square).....10 @ 11c
File.....11c
Sheet.....14 @ 16c
Saw Plate, mill and inlay.....14 @ 16½c
Saw Plate, gang and X cut.....13 @ 14c
" circular as to size.....18 @ 30c

Chrome Steel.

Tool.....₩ ℔ 20 @ 21c
Tool, extra fine.....40 @ 75c
Spring.....₩ ℔ 12c and upward
Machinery.....₩ ℔ 14c
Hammer.....15c,
Gun or Homogeneous.....16c

English Steel.—payable in gold, net.
" Best Cast.....₩ ℔ 17½c
" Extra Cast.....18½c
" Round Machinery, Cast.....₩ ℔ 10¼ @ 11½c
" Swaged, Cast.....19½c
" Best Double Shear.....17½c
" Blister, 1st quality.....14½c
" " 2d quality.....13 c
German Steel, Best.....11½c
do 2d quality.....10½c
3d quality.....9½c
Sheet Cast Steel, 1st quality.....17½c
" " 2d quality.....14½c
" " 3d quality.....12½c
File Steel, Flat and ½ Round.....12½c
" Square and Round.....12½c
" Mill.....13½c
" Taper to 4 inch.....16c
" Taper 3 and 3½ inch.....18c

ANTIMONY.....14 @ 14½c. currency

LEAD—DUTY: Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb.
Spanish.....6½ @ 6½c gold
German Refined.....6½c gold
English.....6½ @ 7c gold
American.....6½ @ 7c currency
Bar.....dis 10 %.....7½c.
Pipe.....dis 10 %.....9c.
Tin Lined Pipe.....dis 10 %.....16½c.
Sheet.....dis 10 %.....9½c.
Shot.....dis 10 %. Drop, 9½c. Buck, 10½c.

FRED. ADEE & CO.'S PATENT TRAPS.

4 in. P ".....net $1·75
2 in. P ".....net ·80
1½ in. P ".....net ·65
1¼ in. P ".....net ·50
2 in. S ".....net 1·05
1½ in. S ".....net ·80
1¼ in. S ".....net ·60

BABBITT METAL.

N. P. U.....₩ ℔ 8½ @ 9c
A., 25c.; B, 20c.; C, 15c.; D, 12c. ₩ ℔.

SOLDER.....No. 1, 12 @ 12½c.; No. 2, 12c

SPELTER—DUTY: In Pigs, Bars and Plates $1 50 per 100 lbs.
Silesian, cash.....6½ @ 7c., gold
American ".....7 @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 1·1c. per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca.....₩ ℔ 22c., currency
Straits.....₩ ℔ 19 @ 20c., currency
English.....₩ ℔ 19 @ 20c., currency

TIN PLATES, CURRENCY PRICES.

I C 10x14, 12x12, 14x20 } Prime Charcoal.....$7·25 @ $7·50
I X 10x14, 12x12, 14x20 } Prime Charcoal.....$9·50 @ $9·75
D C 12½x17 ".....7·00
D X 12½x17 ".....9 75
For each additional X add.....2·25

COKE TIN PLATE.

	Best.	2d quality.	Ordinary.
I C 10x14, I C 12x12, I C 14x20	7·00	6·75	6·25 @ 6·50

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$6 50 @ 6 75	6·25 @ 6·50	5·75 @ 6·00
I X 14x20	9·00		
I C 20x28	14·00	13 00 @ 13 50	12 00 @ 13·00
I X 20x28	19·50		
I C 20x20	21·75		
I C 14x20 M. F. Brand			$8·00

ZINC.—DUTY Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₩ ℔.
Sheet.....cask 7½ @ 7¾
".....open 8c

Paper Stock, Old Metals, &c.

(Dealers' Selling Price.)

Canvas linen.....6 @ 6½
" cotton, No. 1.....@ 3½
" " No. 2.....5½
White linen rags, No. 1.....3½ @ 4
" " No. 2.....2½ @
Colored.....2½ @ 3½
Mixed woolens.....5½ @ 6½
Soft woolens.....2 @ 2½
Gunny bagging.....2½ @ 2½
Jute Butts.....5½ @ 5½
Kentucky bagging.....1 @ 1½
Waste paper and scraps.....1½ @ 3
Rope cuttings.....4 @ 4½
Kentucky Bale rope.....5½ @ 5½
Oakum junk, No. 1.....@ 4
" No. 2.....3½ @ 4
Grass rope.....2
Tarred Shaking.....7 @
White Collar Cuttings, all paper.....5 @
" " " muslin lined.....7 @
" " Envelope.....6½ @
Hard White Shavings, No. 1.....6 @
Soft " " No. 1.....5½ @
White Shavings, No. 2.....4 @ 4½
Mixed Shavings, part white.....5 @
Imperfections, No. 2, best folded sheets.....4½ @
" 1, Heavy Stock.....4
Book Stock, Mixed.....2½ @ 2½
" " No. 2, light.....3
Newspaper Stock.....1½ @ 2
Prints.....2½ @ 2½
Pure Manilas.....1 @ 1½
Bogus Manilas and Hardwares.....1 @
Commons.....1½ @
Binders' Board Cuttings.....1½ @
Straw Board Cuttings.....13 @ 14
Woolen Tailor Clips.....2 @ 2½
Satinet Tailor Clips.....

Old Metal.

Copper.....16½ @ 17
Yellow metal.....13½ @
Brass, light.....10
Brass, heavy.....11½
Heavy Composition.....14½
Old lead, solid.....6
Tea lead.....5
Zinc.....@ 4½
Pewter, No. 1.....15
" No. 2.....9 @ 10
Spelter.....@ 6½
Wrought iron.....per ton $22·00
Machinery iron.....per ton $14·00
Light Iron.....per ton $12·50
Stove plate.....per ton $11·50
Burnt Iron.....per ton $5·00

Paints, Oils, etc.

Paints.

Black lamp—Coach Painters.....₩ ℔ 20c
" " Ordinary.....6c
" Ivory Drop, fair.....15c
" " best.....28c
Black Paint, in oil.....kegs, 8c.; ass't'd cans, 11c
Blue, Prussian, fair to best.....40 @ 55c
" " " " in oil.....25 @ 55c
" Chinese dry.....85c
" Ultramarine.....18 @ 30c
Brown, Spanish.....1½c
" Van Dyke.....9c
Carmine, 40.....combination price
Green, Chrome.....15 @ 25c
" " in oil.....18 @ 25c
" Paris.....good, 30c; best, 40c
" " in oil.....30c " 45c
Mineral Paints.....1½ @ 4c
Orange Mineral.....14c
Red Lead, American.....8½c
" " English.....10½
" Venetian (N. C.) dry.....2c
" " in oil.....ass't'd cans, 11c; kegs, 8½c
" Indian, dry.....10c
Rose Pink.....10 @ 15c
Sienna, American, Raw.....4c
" Burnt.....4½c
" " in oil.....16 @ 20c
" Raw ".....15 @ 25c
Umber, Burnt.....4 @ 8c
" " in oil.....16 @ 21c
" Raw.....3½ @ 7½c
" " in oil.....16 @ 22c
Vermillion, Chinese.....1 00, gold
" English.....72½c, gold
" Trieste.....1 10
" American, Common.....18
White Lead, American, pure dry.....9½c
" " in oil.....10c
White, Paris, English, prime.....in bbls. 2½ @ 2½c
Yellow Ochre, French.....1 75
" " " in oil.....ass't'd cans, 11c; kegs, 8c
" " Vermont.....in casks 1½c
Yellow Chrome.....17 @ 27c
" in oil.....18 @ 28c
Zinc White, American No. 1 dry.....9c
" " 1, in oil.....11c
" French (Paris).....11c
" " in oil.....12c

Oils.

Linseed Raw.....₩ gal. casks, 66c, bbl., 67c
" Boiled.....71c. " 72c
Whale, Crude.....
" Bleached Winter.....75c
Sperm, Crude.....1·60
" Winter unbleached.....1 65
" " Bleached.....1·75
Seal, Extra Refined.....
Lard, Pure Winter.....1·00
" Spring.....95c
Cotton Seed, Crude.....62c
" Southern Yellow.....67c
" White.....
Neatsfoot, Winter.....70c @ $1·10
Natural Lubricating.....38c @ 40c

Sundries.

Asphaltum.....6c
Benzine.....₩ gal. 16c
Chalk.....¾c
" Block.....
Dryer, Patent, Am'n.....ass't cans, 10½c.; keg 9c
" " English.....11c.; " 9c
Flocks.....
Frostings.....50c
Glue, White.....38 @ 44c
" Sheet.....28c
Glaziers' Points, Zinc.....9c
Gum, Copal.....36c
" Damar.....25c
" Shellac, English.....45c
" " " dark.....40c
Litharge.....9½c
Pumice Stone, selected Lumps.....4 @ 6c
" powdered.....2½c
Putty in bladders.....2½c
" in bulk.....2½c
Rotton Stone, soft, English.....8c
Spirits Turpentine.....37c
Whiting, Spanish.....¾c

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

Single Thick.—Discount 60 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$7·50	$6·75	$6·25	5·75
11 x 14 to 16 x 24	8·50	7·75	7·25	6 50
18 x 22 to 20 x 30	10·75	9·75	8·75	7·75
15 x 36 to 24 x 30	12·25	10·75	9·00	
26 x 28 to 24 x 36	13·00	11·50	9·75	
26 x 36 to 26 x 44	14·50	13·25	10·75	
26 x 46 to 30 x 50	15·00	14·00	11·25	
30 x 52 to 30 x 54	16·00	14 50	12·00	
30 x 56 to 34 x 56	17·25	15·50	13·50	
34 x 58 to 34 x 60	18·25	17·25	15·00	
36 x 60 to 40 x 60	20·75	18·75	17·25	

Double Thick.—Discount 60&10 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12·00	$11·00	$10·00	$ 9·25
11 x 14 to 16 x 24	13·75	12·50	11·75	10·00
18 x 22 to 20 x 30	17·25	15 75	14·00	
15 x 36 to 24 x 30	19·75	17·25	14·50	
26 x 28 to 24 x 36	21·00	18·50	15·75	
26 x 36 to 26 x 44	23·25	21·25	17·25	
26 x 46 to 30 x 50	24·00	22·50	18·00	
30 x 52 to 30 x 54	25·75	23·25	19·25	
30 x 56 to 34 x 56	27·75	25·00	21·75	
34 x 58 to 34 x 60	29·25	27·75	24·00	
36 x 60 to 40 x 60	33·25	30·00	27·75	

Sizes above 40 x 60—10·00 per box extra for every five inches.

An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket.

Steel.

SULZBACHER, HYMAN, WOLFF & CO.,

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Sole Agents for the Sale of the Celebrated

Pr. HOMOGENOUS DEC.' CAST STEEL, GUN BARRELS, MOULDS AND ORDNANCE.

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(SC) "EXTRA" CAST STEEL, SHEAR, SHEET AND BLISTER STEEL.

Best Cast Steel Wire Rods and Steel Wire of the finest quality for all Purposes.

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MOSS & GAMBLE **SUPERIOR C. S.** "FULL WEIGHT" **FILES,**

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel.

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STEEL GOODS.

Sweet's Excelsior Tire Steel. *Sweet's Oil Tempered Black Seat Springs.*

SLEIGH SHOE STEEL.	CALKING STEEL.	STEEL CUTTER SHOES.
MACHINERY STEEL.	KNIFE BACK STEEL.	" HARROW TEETH.
SPRING STEEL.	STEEL CROW BARS.	" TOE CALKS.

AND ALL KINDS OF ROLLED AND HAMMERED STEEL.

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CAST STEEL,

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SAW PLATES,

All descriptions of Cast and German

Spring and Plow Steel

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators, Reaper Bars, Crow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

R. MUSHET'S

Special Steel

FOR

LATHES, PLANERS, &c.

Turns out at least **double work** by increased speed and feed, **and cuts harder metals** than any other Steel. Neither hardening nor tempering required.

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Sporting, Shipping, and Mining

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Invite the attention of the Hardware Trade to their facilities for delivering

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The superiority is well known of our brands of Sporting Powder.

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ELECTRIC BLASTING APPARATUS.

SAFETY-FUSE at wholesale.

HIGHEST MEDAL AWARDED.

PATENT IMPROVED STEAM TRAP.

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The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late im provements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.

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Manufacturers of the Celebrated

Cast and Double Shear

STEEL.
In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table Knives, Turning Tools, Dies, Files, Clock and other Springs, and Tools of every variety.

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BUTCHERS' KNIVES,
BUTCHERS' STEELS,
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THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

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Works:—SYCAMORE STREET. SHEFFIELD. ESTABLISHED in the Year 1750

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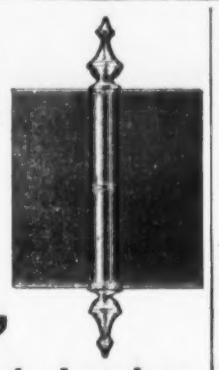

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HAMMERED AND FINISHED HORSE NAILS.
We offer our Finished Nail to the trade with the confidence that it has no equal in the market. It is the genuine "Northwestern" Nail, Finished, and we give it our unqualified guaranty.

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Pointed Polished & Finished Horse Shoe Nails.
Recommended by over 20,000 Horse Shoers.

All nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

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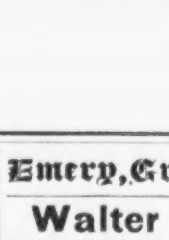

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Rough & Ready And CLIPPER SCYTHES, Warranted.

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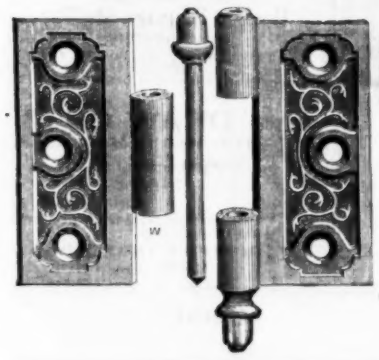

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Send for Catalogue and Price List.

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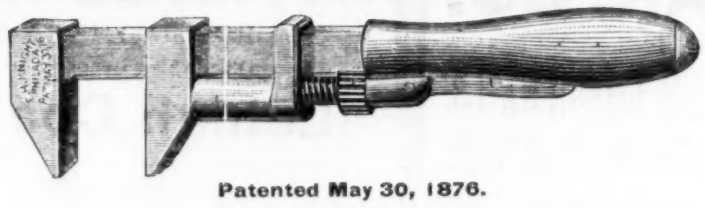

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"STEEL BAR." SAVES HALF THE TIME.

First Premium awarded at the Centennial Exhibition.

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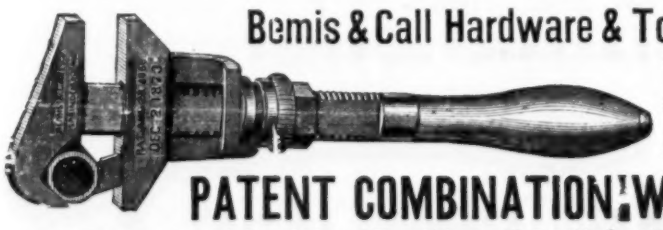

Bemis & Call Hardware & Tool Co.

This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-Hardened throughout, and not only combine all of the superior qualities of our cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a Combination which has no equal.

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METALLIC SIEVES.

Protected by 14 patents.

MANN'S PATENT.

Best Sieve known, Cheap, Neat and Durable.

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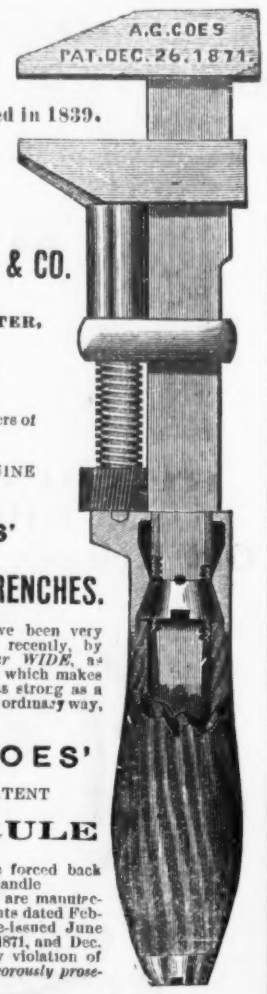

Established in 1839.

A. G. COES & CO.

WORCESTER, Mass.,

Manufacturers of

THE GENUINE

COES'

SCREW WRENCHES.

Our goods have been very much improved recently, by making the *Bar WIDE*, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

A. G. COES'

NEW PATENT

FERRULE

Which cannot be forced back into the handle

☞ Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be *vigorously prosecuted.*

We call particular attention to our new Patent Ferrule, with its Supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

A. G. COES & CO.

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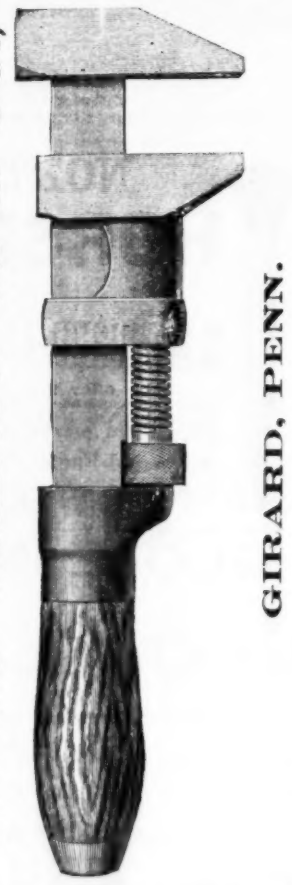

GIRARD WRENCH MFG. CO., GIRARD, PENN.

This Wrench is presented to the trade with full confidence that it is equal in all respects to any heretofore manufactured, and we fully guarantee our goods in every respect.

Send for circular, terms and prices.

Lloyd, Supplee & Walton,

HARDWARE FACTORS.

MANUFACTURERS OF

Bonney's Hollow AUGERS.

Stearn's Hollow Augers and Saw Vises

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Adjustable Gate Hinges

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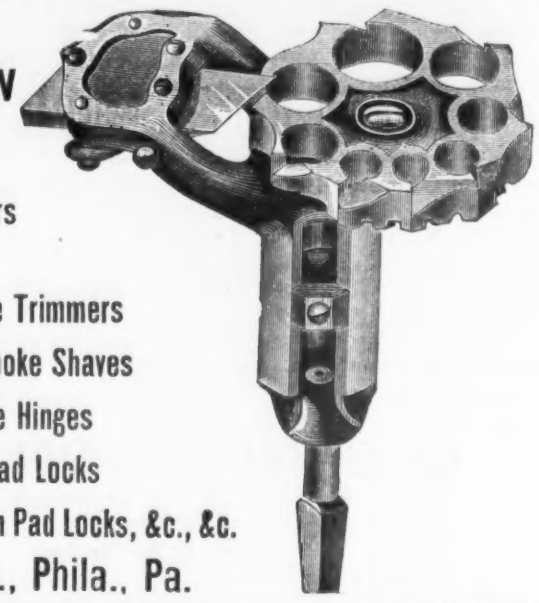


"FELTER'S PATENT LOCKS,"

MANUFACTURED BY

The American Lock Mfg. Co.,

Are the most **SECURE** and **DURABLE** ever made.

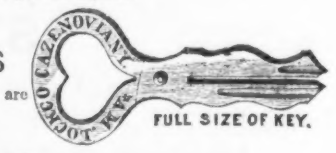
SECURE

Because they have 40 Brass Tumblers, independent in their action, either one of which will prevent the Lock from being opened unless brought to proper position by the Key.

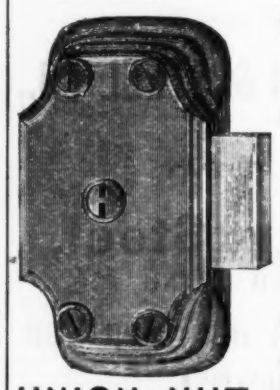
DURABLE

Because we use no Springs to break or get out of place.

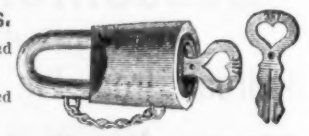
THEY HAVE STERLING METAL KEYS That will not corrode or wear, and are stronger than steel.



FULL SIZE OF KEY.



Upright Rim Dead Locks,
Horizontal Rim Night Latches,
Horizontal Rim Tubular Night Latches,
Mortise Night Latches, Plain Fronts,
Mortise Night Latches, Ornamental Bronze Fronts and Knobs,
Brass Chest, Box, Cupboard and Drawer Locks,
Solid Bronze Padlocks.



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MRS. POTTS' COLD HANDLE IRONS,
COFFEE, SPICE AND DRUG MILLS,
CORK PRESSERS, SAUSAGE STUFFERS,
FRUIT, LARD & JELLY PRESSES Combined,
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BUNG-HOLE BORERS, &c., &c., &c.

S. W. cor. American and Dauphin Sts.

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V. G. HUNDLEY.

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North Carolina Handle Co.,

Manufacturers of

SPOKES, AXE, PICK, SLEDGE, HAMMER, HATCHET and other HANDLES.

Full assortment always on hand.

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(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wright's, ₱ ℔, gold.....11 @ 10½c
Wilkinson's " .....11 c
Eagle.....9 cents per lb—dis 20%

Apple Parers.—Domestic.....per doz $ 6 50
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Bay State Parer, Corer and Slicer..... " 12 50
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Lots of 5 to 25 dozen special price.

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Red Indian, " " " " 10 50 @ 9 50
Red Chieftain " " " " 11 00 @ 10 00
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Augers and Auger Bits.—
Benjamin Pierce.....dis 35 @ 40 %
Douglass' & Ives' Bits.....dis 45 %
Connecticut Valley Auger Bits.....dis 50 %
Coe's Bits.....dis 50 @ 50&5 %
Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 40 @ 40&10 %
Douglass' & Ives' Augers.....dis 45 %
Westrous' Ship Augers.....dis 20 %
Bonney's Pat. Hollow Augers.....dis 25&10 %
Stearns' Patent Hollow Augers.....dis 25&10 %

Balances.—
Light or "Common".....dis 25&10 %
All other Spring Balances.....dis 25 %

Bells.—Bevin Bros. Mfg Co. Light Hand Bells...dis 70 %
Hand, Common.....40&10 @ 75 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50&10 %
Gt. Western & Kentucky Cow, new list.....dis 40 %

Boring Machines.—Bates Mfg. Co., complete with augers.....dis 25 @ 25&10 %
Douglass Mfg. Co., complete with augers.....dis 40 %
Common Boring Machines, no Augers.....$5 15 net
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Western " " 75 %
Philadelphia " " .....dis 60&10 @ 60&20 %
Coleman " " .....dis 60&10 @ 60&20 %
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Braces.—Barber's.....dis 40&5 %
Packus.....dis 50 @ 5 0&10 %
Bartholomew's American Ball.....dis 20&10 %
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Butts.—Cast Best Joint, Narrow.....dis 30, 12½&10 %
" " Broad.....dis 40, 12½&10 %
Cast Loose Joint.....dis 50, 12½&10 %
" Acorn, Loose Pin.....dis 45, 12½&10 %
" Acorn " Jap'd.....dis 55, 12½&10 %
" Mayers and Parliament.....dis 40, 12½&10 %
Lull & Porter's (Phila.) Hinges.....dis 65 @ 65&10 %
Wrought Loose Pin.....dis 40&5 %
" Table Hinges and Back Flaps.....dis 55&5 %
" Narrow " " " .....dis 40&5 %
" Loose Joint.....dis 40&5 %

Blind Butts.
Parker.....dis 70 @ 70&10 %
Buffalo Hardware Co.....dis 60 @ 60&10 %
Clark.....dis 60 @ 60&10 %
Shepard.....dis 60 @ 60&10 %
Garretson.....dis 60 @ 60&10 %

Chains.—German Halter and Coil.....dis 25 % gold
Galvanized Pump.....net 10½c
Best Proof Coil Chain—

₱ ℔	12	9	8½	8	7⅞	7¾	7c gold
	3-16	¼	5-16	⅜	7-16	½	⅝ in.

By the cask, 500 lbs., ½c per lb. less. Common Chain, ¼c per lb. less.

Chisels.—Socket Framing.....dis 60, 10&10 %
Socket Firmer.....dis 60 @ 60&10 %
Tang " .....dis 40 %
Beaty's Framing and Firmer.....dis 2 %

Casters.—Iron Bed.....dis 40&10 @ 50 %
Porcelain Wheel Bed.....dis 40&10 @ 50 %
Iron and Brass Wheel Plate.....dis 50 @ 5 0&10 %
Porcelain Wheel " .....dis 50 @ 50&10 %

Coffee Mills.—Common Box and Side.....dis 25 %
Patent Box and Side.....dis 25 %

Cutlery.—American Pocket (best).....dis 30 @ 33⅓ %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices

Drawing Knives.—
Hart Mfg. Co.'s.....dis 60&10 @ 60, 10&10 %
Adjustable Handle.....dis 10 @ 15 %
Beatty's.....dis 15 @ 20 %

Fry Pans.
Tinned.....dis 50 @ 50&10 %

₱ doz.	$3 50	4 00	4 50	5 00	5 50	6 50	7 50	9 00	10 00
No.	0	1	2	3	4	5	6	7	8

Burnished.....dis 50 @ 50&10 %

₱ doz.	$3 00	3 75	4 25	4 75	5 25	6 00	7 00	8 00	9 00
No.	0	1	2	3	4	5	6	7	8

Files.
Nicholson Mill Files.....new list, dis 25 @ 30 %
" Bastard.....dis 25 @ 30 %
" Taper.....dis 25 @ 30 %
Butcher's Mill.....₱ £ gold $4 75 @ $4 50
" Bastard.....₱ £ gold 4 75 @ 4 50
" Taper.....₱ £ gold 4 75 @ 4 50

Fluting Machines.
Mrs. Knox—4 in. rolls.....each $3 25 dis 10 %
" —6 in. rolls....." 3 80 dis 10 %
" —8 in. roll....." 5 60 dis 10 %
Imperial—4¼ in. roll.....each $3 25 net @ dis 10 %
" —6 in. roll....." 3 75 net @ dis 10%
Crown—4¼ in. roll.....each 3 25 net
" —6 in. roll....." 3 50 net

Hammers.
Yerkes & Plumb's.....new list dis 25 %
Hammond & Son's.....dis 25 %
Veree.....dis 20 @ 25 %

Hatchets.
Beatty's.....dis 25 %

₱ doz.	$1 00	7 50	7 75	8 00
No.	1	2	3	

Yerkes & Plumb.....dis 25 %

₱ doz.	$1 00	7 50	8 00	8 50
No.	1	2	3	4

Claw.....

₱ doz.	$7 50	8 00	
No.	1	2	3

Hinges.
Strap and T.....dis 60&5 %

Horse Nails.

	Nos.	5	6	7	8	9	10
Putnam		32	28	26	25	24	22
Ausable Pointed & Polished, list		28	26	25	24	23	
Clinton Horse Nails		20	18	17	16	15	
" Polished and Pointed		21	19	18	17	16	
Globe		28	26	25	24	23	

Discount on Ausable, Globe and Putnam.....dis 10 %

Knobs.—
Rim and Mortise.....dis 35 @ 35&2 %

Locks and Latches.
Door Locks, Rim and Mortise.....dis 35 @ 35&2 %
Tilt and Cupboard Locks.....dis 25 @ 25, 5&2 %
American Padlocks.....dis 25½ @ 35½&5 %
Scandinavian Pad Locks.

₱ doz.	$10 50	10 50	12 00	12 00	15 00	15 00	} 50&10 @
No.	59	59½	60	60½	61	61½	} 50&15 a
₱ doz.	$18 00		18 00		22 00		22 00 } 50 %
No.	62		62½		63		63½ }

United States Lock Co.....dis 35 %
Trunk Locks.....dis 25 %

Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" " Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %

Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 62½&10 %
Lincoln's " .....dis 50&10 %
Landers, Frary & Clark's Petroleum.....dis 15&10 %
Taylor's Petroleum Faucets.....dis 20&10 %
Brass Liquor Cocks.....dis 45 @ 50 %

Meat Cutters.—Dixon's.....dis 25 %
Woodruff.....dis 25 %
Stowe.....dis 25 %
Hale's.....dis 25 %
Stuffers.....dis 25 %

Planes.—Auburn Tool Co., "Bench".....dis 40 %
Second Quality.....dis 50 %
Bailey Iron Planes.....dis 50&10 %
Evans Pat. Circular.....net

Plane Irons.—American.....dis 10 %
Butcher's.....gold £, $5 00

Plumbs and Levels.
Adjustable.....dis 60&10 %
Non-Adjustable.....dis 60&10 %

Picks.—Philadelphia.....net
Pittsburgh.....net

Rules—Boxwood.....dis 55&10 %
Ivory.....dis 45&10 %

Rakes.—Cast Steel Garden.....dis 40 @ 40&10 %
Malleable Garden.....dis 40 @ 40&10 %
Wood Head Iron Teeth.....dis 40 @ 40&10 %

Steelyards.—American Pattern.....dis 20 @ 25 %

₱ doz.	$5 50	7 00	9 00	10 00	1	12 00
No.	50	100	150	300	25	300

English Pattern.....dis 10 @ 20 %

₱ doz.	$7 00	8 67	10 67	12 67	14 67	16 67
No.	50	100	150	200	250	300

Hart's Pattern.....dis 55 @ 55&10 %

₱ doz.	$14 50	17 75	21 00	26 50	31 00	35 50
No.	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₱ doz. $9 50
Clipper No. 10, Bronzed Blade Boxed and Sharpened.....₱ doz. $9 00
Clipper No. 5, Painted Red, Boxed and Sharpened.....₱ doz $8 50
Cast Steel Scythes.....$7 50 @ 8 00
German " .....6 50 @ 7 00

Squares.—Steel and Iron, new list.....dis 50 %

Saws.—Disston's Cross Cut, No. 1.....per ft., 55c
Disston's Cross Cut No. 2.....per ft., 50c
Disston's Cross Cut, Patent.....per ft., 50c
Disston's Circular Saws.....dis 25 @ 37 %
Disston's Hand Panel and Rip, &c.....dis 20 %
W. McNiece's H'd, Cross-Cut & Circ'r, new list.dis 15 %
Boynton's Lightning Cross-Cut.....dis 50 @ 50&10 %
Boynton One-Man Cross Cut Saws.....dis 40&10 %

Shovels and Spades.
Rowland's Plain Back.....dis 47½ & 2½ %
" Back Strap.....dis 47½ & 2½ %
Extra discount on above for 10 days' cash, 5 %.
Oliver Ames & Sons, new list.....dis 30 %

Sad Irons.—Richmond (polished face).....per lb. 3½c
Richmond (polished face).....by the cask " 3
Stone.—Arkansas Oil, No. 1.....₱ ℔ $
Turkey Oil, No. 1....." 25c
Washita Extra.....net " 35c
" No. 1.....net " 80c
" " 2.....net " 25c
Hindostan 8 inch.....₱ ℔ 4¼ @ 4¾c., net

Screws.
United States and others in Combination.....dis 60 %

Spoons.—
Plated.....dis 40 @ 40&5 %
Britannia, Boardmans (new list).....dis 50&10 %
" Parkers (old list).....dis 50 & 50&10 %
German Silver.....dis 25&5 %
Lalance & Grosjean Iron.....dis 50&5 %
" by case.....dis 20&5 %

Springs.—Gray's Door.....$2 15 @ $2 25
Torry's Door.....2 15 @ 2 25
Gem.....d s 10 %

Stocks and Dies.—dis 10&5 %

Stove Polish.—Gem.....₱ gross, $4 25 @ 4 50
Onyx.....$4 00 @ 4 25
Dixon.....$5 75 @ 6 00

Try Squares.—Winterbottom.....dis 20 @ 20&10 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 45 %

Tacks, &c.—Half Weight Tacks.....dis 75 @ 75&10 %
Trunk, Clout and Finishing Nails.....net to 10 %

Traps.
Genuine Oneida—Newhouse.....list dis 25 @ 25&2 %
Im. Oneida—Newhouse list (1st qual.).....dis 40&45 %

Vises.—Solid Box, Trenton.....₱ ℔ 12½c

Wrenches.—Coes Genuine.....dis 50 %
Coes Pattern Wrought Bar.....dis 50&10 %
" " Malleable Bar.....dis 70&10 @ 75 %
Gleard Wrenches, Coe's Pattern.....dis 50&10 %
" Agricultural Wrench.....$5 60 $5 49 net
Wrought Bar, Coe's Pattern.....10 12 in
Tafts Pattern (Wrought Bar).....dis 70 @ 70&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " " Improved Baxter.....dis 25 %

Wire.—
No. 0 to 18.....dis 52½ @ 55 %
No. 19 to 26.....dis 57½ @ 60 %
No. 27 to 36.....dis 60 @ 62½ %
Coppered 0 to 14.....dis 47½ @ 50 %
Tinned Broom Wire.....dis 35 %
Galvanized Wire No. 1 to 14.....dis 25 %

Wringers.—Novelty No. 10.....$63 00
Nove ty No. 2.....66 00
Universal.....66 00

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

March 1, 1877.

Bells, Cow—Saw's Genuine.....dis 25 %
Braces—Bit, Spofford's Patent.....dis 10 %
Brads, Cut.....dis 70 %
Brass—Sheets.....dis 50&10 %
Boards—Stove, Brooks' Pat.dis 35 % 4 mos.; 33&5 % 30 days
Bolts—Stove.....list net
Brick—Bath (box of 2 doz) Best English.....dis 45 %
Can Openers—Sorsgne's.....$1 13
Cases—Parlor Coal Hod.....dis 55&10 %
Chisels—Firmer Socket.....dis 15 %
Framing Socket.....dis 60, 10&10 %
Corner socket Chisels.....dis 60, 10&10 %
Slick's Carpenters'.....dis 60, 10&10 %
Castings—Malleable.....dis 60, 10&10 %
Cocks—Globe and Bibb.....₱ ℔ 7½c
Cutters—Meat, "Halea".....40 %
Egg Beaters—"Dover".....per doz $4 00
Elbows—Corrugated.....dis 15 %
Adjustable.....dis 20 %
Columbus.....dis 25 %
Files—Maischoss Bros.....dis 50&10 %
Fluters—Geneva Hand.....dis 45 %
Freezers, Ice Cream—"Champion".....dis 33⅓&5 %
Hinges, Gate—Shepard's.....dis 40&5 %
Hinges—Window Blind—
Shepard's and Standard.....dis 60&10 %
Hoes, Coal—Plain, Black and Galvan'd...new list dis 15 %
Funnel, Black and Galvanized.....dis 15 %
Fancy and Helmet.....dis 15 %
Sad Irons.....3c
Kettles—Brass.....₱ ℔ 45c
Copper, "Hand Made".....38c.
Enameled.....dis 50 %
Knives, Drawing—Oval No. 1.....dis 60, 10&10 %
Razor Blade.....dis 60&10 %
Lanterns, Tubular—with guard.....$11 00 / dis 15 %
Without guard.....1 50 /
Machines—Apple Paring.....7 50 ₱ doz
Mills, Coffee—Box and Side, common.....dis 25 %
Box Union and Eagle.....dis 30 %
Cut Nails, "Chesapeake," 10d.....$2 85
Horse, Ausable.....No. 5 / 6 / 7 / 8 / 9 / 10
20 / 27 / 25 / 24 / 25 / 22c
" " Pointed & Polished.....add 1c ₱ ℔
" " 100 lbs.....
Paint—White Lead, U. S. Gov't.....dis 5 %
Pans—Dripping.....₱ ℔ 8½c
Fry ng.....₱ ℔ 9c
Rivets—Iron, Black and Tinned.....dis 50 %
Screws—"American Screw Co"—
Flat Head, Iron.....dis 60 %
Flat Head, Brass.....dis 55 %
Sieves—Wood, Hoop iron.....$1 25
Tinned.....1 50
Sifters—Ash.....$9 00 @ $12 00
Skates and Straps—White's.....dis 30 %
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
S. S. & Co., Kitchen.....dis 20 %
Plated Rogers' A No. 1.....dis 40 %
Britannia.....dis 55 %
G. S. Hall, Elton & Co.....dis 25 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Stove Polish—Gem.....₱ gross, $3 00 ; bulk, per ℔ 3c.
" Dixon's....." 6 00
Palace.....₱ gross, $3 00 ; bulk, per ℔ 3c.
Squeezers—Lemon, Porcelain.....₱ doz., $5 40
Tacks—Half Weight Am. Iron.....dis 75&10 %
Tea Trays.....dis. 15 %
Thermometers—Tin Case.....dis 50, 10&10 %
Tools—Trowels.....dis 10 %
Vases—Palace Coal.....dis 15 %
Vises—
Parallel, Buffalo.....dis 30 %
Wire—Brass and Copper.....dis 30 %
Wire—Bessemer Steel.....list net
Wringers—Novelty.....dis 15 %
Tin Plates.—Add for each X.....$ 2 50
10x14, IC, Charcoal.....$8 00 / 14x20 C., terne.....$7 00
12x12, " .....8 00 / 20x28 C. " 15 00
12½x17, " .....7 50 / 20x28 X. " 20 00
14x20, " .....8 00 /
Pig Tin—Straits.....21½c @ 21c
Bar Tin.....21½c
Solder—No. 1, Crook's.....13c
No. 1 Star.....13c
Sheet Zinc—
"Lasalle".....570 ℔ casks $8 50 / 100 ℔ casks 8 50 ₱ 100 ℔
Sheets.....$8 50
Babbitt Metal.—₱ ℔ 12c
Iron Wire—Bright and Annealed.....dis 52½ %
Coppered.....dis 47½ %
Tinned.....dis 35 %
Tinned Broom, Nos. 20 / 21 / 22 } 20c / 21c / 21c } dis 40 %
Copper—Sheathing 14 @ 18 oz.....₱ ℔ 31c
Planished.....₱ ℔ 35c
" Boiler Sizes.....₱ ℔ 39c
Bottoms.....₱ ℔ 32c
Bolts.....₱ ℔ 32 @ 34c
Braziers' Sheets.....₱ ℔ 32 @ 34c
Sheet Iron.
14 Common.....$3 40
24 Common.....3 60
26 Common.....3 80
24 W. B. Wood & Co., Smooth Finish.....4 50
Planished.....A. 12c / B. 10c
Gen. Russia, No. 1 stained.....12½c
" clean.....13½c
Galvanized.....dis 33½ %
Tin Ware.
Deep stamped Plain and Retinned.....32½ %
Com. " " .....dis 40 %
Japanned " " .....dis 20 %

CHICAGO.

(The Chicago Stamping Co., 72, 74 & 76 Lake St.)

March 1, 1877.

Tin Plate.—

10x14, IC, Ch'l. Goods		14x20, IXX, Ch' Best	12 75
10x14, IC, " Best,	7 75	14x20, IXXX, " "	15 25
10x14 IX, " "	10 25	DC, 100 Plate " "	7 75
12x12, IC, " "	7 75	DX, " "	10 25
12x12, IX, " "	10 25	DXX, " "	12 75
14x20, IC, " "	7 75	DXXX, " "	15 25
14x20, IX, " "	10 25	IC, Roofing, " "	7 25
20x28, IC, Charcoal Roofing, Good		IX, " "	9 75
20x28, IC, " Best			14 50
20x28, IX, " "			15 00
10x14, IC, Coke Plates			19 50
14x20, IC, "			7 00
10x20, IC, "			7 25
			11 25

Block Tin.—
Large Pigs.....24c / Bars.....26c
Small.....25c
Zinc.—Sheet, 500 to 1000 ℔. Casks.....8 c
Loose Sheets.....8½c
Slab Zinc or Spelter.....7 c
Copper.—Bottoms.....34c
Sheathing.....31c
Planished.....38c
" Boiler lengths.....40c
Bolt.....35c
Braziers' Sheets.—
30x60, 8 to 7 lbs.....₱ ℔ 36c / 30x60, 10 to 12 lbs.....₱ ℔ 34c
30x60, 8 to 9 lbs....." 36c / 30x60, 15 to 100 lbs. " 32c
Solder.—F. S. & Co.'s make
Best Fine.....18c
No. 1.....17c
Roofing.....15c
Braziers or Spelter Solder.....15c
Antimony......20c
Babbit Metal—F. S. & Co.'s.....16c
No. 2.....14c

Sheet Iron.—

	Common.	Smooth Com.	Smooth Charcoal.	Smooth Juniata
No. 24	3½c	4½c	5¼c	5¼c
25 & 26	3¾c	4¾c	6½c	8½c
27	4 c	5 c	6¾c	8¾c

Galvanized Iron.

No. 16 to 20	12c	No. 27	15c
21 to 24	13c	28	16c
25 & 26	14c		

Russia Iron.—
Perfect.....14c / No. 1 Stained.....13c
In Sheets, 1c. higher.
American Russia.—
A.....13c / B.....10c
In sheets, 1c higher.
Lead.—
Pig.....7½c / Lead Pipe, in full coils 9
Bar.....8½ / Lead Pipe, when cut.. 9½
Sheet Lead.....9½
Wire—Bright.....dis 45 %
Coppered.....dis 40 %

PITTSBURGH.

The following are the Card rates, f. o. b. in Pittsburgh of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent.

Merchant Bar Iron.....2c rates net
Flat Rail (1¾x¼), punched and coun'sunk..3¾c ₱ ℔ net
Iron Wedges.....3¾c ₱ ℔ net
Norway Nail Rods, Vesa.....4 c ₱ ℔ net
Iron Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)...4 c ₱ ℔ net
Beetle Rings.....5¾c ₱ ℔ net
Fence Pickets—
⅜ r'nd, bent to shape, 25c ₱ ft. of fence, less 15 % off net
Discount off Standard List.
Carriage and Tire Bolts, $500 worth purchased in six months, ending July and Jan. 1....15, 5&3 % off net
Stove Bolts.....40 % off net
Elevator Bolts.....30 % off net
Machine and Square Head Bolts.....60 % off net
Coach and Lag Screws.....60 % off net
Bolt Ends.....50 % off net
Pat. Hot Pressed Sq. and Hex. Nuts.....75c ₱ ℔ off net
Washers, all made from new band iron..75c ₱ ℔ off net
Nuts and Washers in 25 lb. boxes, ½c ₱ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₱ ℔ ex. Nuts and Washers in 5 lb. boxes, 1c. ₱ ℔ ex.
Standard Caps, for Plows.....1½c. ₱ ℔ net
Iron Harrow Teeth, in lots of 1 ton or more, packed in 300 lb. boxes, 1 in. diam. 2½c ₱ ℔ net; ⅞ in. diam. 2¾c ₱ ℔ net; ¾ in. diam. 3c ₱ ℔ net.
Pat. Headed Harrow Teeth, packed in boxes, ½c ₱ ℔ ex.
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 4½c ₱ ℔ net; 9-16 in. diam. 5½c ₱ ℔ net; ½ in. diam. 6½c ₱ ℔ net. ½c ₱ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook and Eye Hinges, with Pat. Hooks, ¾ to 1 in. diam., 7c ₱ ℔ net; ⅝ in. diam., 8c ₱ ℔ net; ½ in. diam., 10c ₱ ℔ net.
Screw and Strap Hinges—all sizes under 28 in. long have Pat. Hooks; 12 to 36 in. long, 3 & 10c ₱ ℔ net; 6, 8, 10 and 12 in. long, 4 9-10c ₱ ℔ net.
Strap & T Hinges.....6 & 10 % off list
Hereafter we will not make any allowances for freight on Strap and T Hinges; our price on them is F. O. B. in Pittsburgh.
Screw Hitching Rings, light, with ¼ ring, No. 1, $4 00 ₱ 100 net; heavy, with 5-16 ring, No. 2, $4 50 ₱ 100 net.
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long.....₱ ℔ 3½c net
1 to 2 in. diam. from 4 to 8 ft. long.....3½c net
1 to 2 in. diam. from 1½ to 4 ft. long.....3¾c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long.....4 c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long.....4½c net
Bridge bolts with upset ends.....¼c. ₱ ℔ extra
Wrought Iron plates, punched.....1¼c. ₱ ℔ net
Cast Iron Washers.....₱ ℔ 3½c net
Grass Rods.....5½c ₱ ℔ net
Heel Bolts.....5½c ₱ ℔ net
Duzik Neat Tuyere Irons.....$13 50 ₱ doz net
Wrought Iron Repair Links.....15 % off net
" Rings.....50 % off net
" Lap Rings.....33⅓ % off net

WAGON HARDWARE.

Single Trees, Neck Yokes and Double Trees, made from best selected Hickory, and ironed complete, in the most approved patterns.
No. 1 Southern Plow Single Tree, Ironed complete, Irons all Wrought.....each, 38c net
No. 2 Western Plow Single Tree, Ironed complete, Irons all Wrought.....each, 50c net
No. 3 Wagon Single Tree, Ironed complete, Irons all Wrought, except Malleable Ferrule.....each, 60c net
No. 4 Wagon Single Tree, Ironed complete, Irons all Wrought; Improved End Pieces riveted on; one side acts as a wear iron for wheel to rub against.....each, 60c net
Neck Yoke, Ironed complete, Irons all Wt., except End Ferrules, with Wt. Iron Rings.each, 70c net
Southern Plow Double Tree, Ironed complete, Irons all Wrought.....each, 60c net
Wagon Box Strap Bolts—For Orders of 50 Set, 45 % dis

10	in. long by	7-16	at Screw End,	₱ set of	8	bolts.. 45c
12	"	½	"	"	6	" .. 55c
10	"	9-16	"	"	8	" .. 65c
12	"	9-16	"	"	8	" .. 70c
14	"	9-16	"	"	8	" .. 80c
10	"	⅝	"	"	8	" .. 80c
12	"	⅝	"	"	8	" .. 80c
14	"	⅝	"	"	8	" .. 90c
16	"	⅝	"	"	8	" .. 1'00
18	"	⅝	"	"	8	" .. 1'10
20	"	⅝	"	"	8	" .. 1'20

5c ₱ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wrought Iron Bolster Plates, 2¾ in. wide, ₱ set.....45c
" " " 3 " " " 50c
" " " 3½ " " " 55c
" " " 3¾ " " " 60c
Wrought Hammer Straps, heavy pattern, each.....13 c
" " " light " each.....12 c
" Rub Irons, each.....9 c
Double and Single Tree Clips, figure 1, each.....8 c
" " " " 2, each.....9 c
" " " " 3, each.....11 c
Pole Caps, each.....30c
Strap Bolts, Bolster Plates, Hammer Straps, Rub Irons, Clips and Pole Caps, in lots of 50 sets.....dis 40 %
For each order amounting to $200 net, or over, for the following goods: Wagon Hardware, Carriage and Tire Bolts, Rivets, Skein Bolts, Nuts, Washers, Chains, Bevel Box and Tongue Cap Iron, we will allow an extra discount of 10 per cent. off all Wagon Hardware, subject to discount, comprised in the order. Jobbers who do not deal in iron, we allow to substitute Strap and T Hinges in lieu of Bevel Box and Tongue Cap Iron to make order up to $200 worth and secure the extra discount of 10 per cent.
Single Tree Hooks, Nos. 1 and 2.....each, 3½c net
Single Tree Irons, New Pattern.....each, 4½c net
Stay Chain Hooks.....each, 3¾c net
Wagon Box Rods, narrow track, with Pat. Collar.....each, 7¼c net
Wagon Box Rods, wide track, with Patent Collar.....each, 8½c net
Wagon Brake Ratchets.....each, 7 c net
" " " finished with guard .each, 20c net
Single Tree Iron, Wt. Hook, Malleable Ferrule.....each, 2½ net
Single Tree Iron, Wt. ⅜ Hook and 7-16 Clip. each, 7c net
Single and Double Tree Iron, Wrought Center Clip, ⅝ in. Welded, with ½ in. Ring...each 10c net
Southern Plow Center Clip, ½ in. Welded, and 7-16 End Clip with 5-16 in. Hook—per set of 3 pieces.20c net
Neck Yoke End Ferrule, Malleable, with Wt. Iron Ring.....each, 6½c net
Neck Yoke Attachment, with plates complete.....each, 23c net
Axle Tree Clips, No. 1.....each 2½c net
" " No. 2.....3¼c net
" " For Farm and Lumber Wagons, Shank, 9-16 in. flat part 1½ in.....each, 6½c net
Plow and Wagon Clevises.....₱ ℔ 7c net
California Tire Rivets and Burrs, 5-16.....10c net
" " " ½.....11c net
Wagon Box Staples, 1¼ to 2¼ in. to clinch. ₱ 1000 $10 75 net
" " " Bevel Box Iron, to rivet on, ₱ 1000 7 25 net
Neck Yoke Eyes, each.....4½c net
" " with ⅜ rings, each.....7c net
King Bolts, ⅝, 1, 1⅛, and 1¼ in. diam.....₱ ℔ 34c net
Wagon Rivets, ex. large flat, oval and steeple head, ¼ in. diam., 1 in. and longer.....7 c net
Wagon Rivets, 3-16 in. diam., 1 in. and longer.....8 c net
" " ¾ to 1 inch long.....₱ ℔ 1c extra
" " & Nails, in 5 ℔ paper boxes.....1c extra
" " " in 25 ℔ wood " .....½c extra
Wagon and Hinge Nails, pointed by hand—

¼x3 and longer.	2¼ & 2½	2 & 2½	1¾ and shorter.
	11c ₱ ℔.	13c ₱ ℔.	15c ₱ ℔. 17c ₱ ℔ net
3-16x3 and longer.	2¼ & 2½	2 & 2½	1¾ and shorter.
	12c ₱ ℔.	14c ₱ ℔.	16c ₱ ℔. 18c ₱ ℔ net

Wagon Rivets and Nails, in less lots than one keg each size.....₱ ℔ ½c extra
Double Tree Plates.....7½c net
Coupling " .....4½c net
Tongue " .....7½c net
Neck Yoke Plates.....8½c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₱ ℔ as No. 12 Band Iron.
Sand Band Iron, 1¼ in. wide, same price as No. 12 Band Iron.
Hub Band Iron, ½c ₱ ℔ over price of same size Band Iron.
Wagon Chains, Stay, Lock and Tongue, 5-16 in. ₱ ℔ 7c net; ¼ in., 8c net.
Our prices are all subject to change of market, without notice.

BRIGHAM, LITCHFIELD & VINING,

Manufacturers of all kinds of

TACKS, Brads, Nails, &c.

All headed work assorted by our new

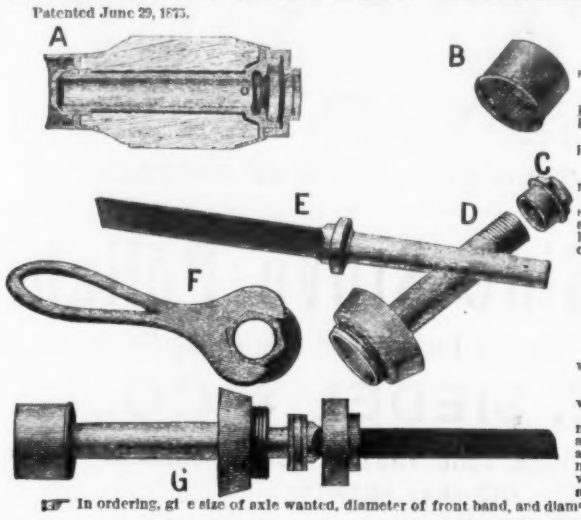
PATENT ASSORTER,

which removes all dust and slivers and imperfect Tacks, so that the purchaser pays for nothing but **PERFECT GOODS.** Every kind of Tack or Nail made to order from samples. We allow nothing but **FIRST-CLASS WORK** to go out of our factory.

Also Manufacturers and Proprietors of

HENDRY'S PATENT CARRIAGE AXLE.

Patented June 29, 1875. Patented June 13, 1876



DESCRIPTION,

A, Section of hub complete, showing oil-chamber o.
B, Front band.
C, Nut which screws on to box D, and confines box D and band B to the hub.
D, Box and back band in one piece.
E, Axle.
F, Wrench in place on back nut.
G, Axle with back nut unscrewed from box, and both slipped from the collar, showing leather washer each side of collar, and front band in place.

Points of Excellence.

No oil can come in contact with the wood of the hub.
No oil can escape.
No dirt, gravel or water can work.
It holds the wheel in a superior manner. It is easier to oil than a common axle. It is adapted to any kind of a wheel. It requires no wedging to box the wheel. It will run **500 to 1000 miles at a single oiling.**

☞ In ordering, give size of axle wanted, diameter of front band, and diameter of hub.

South Abington, Mass.

Warerooms, 97 Chambers and 81 Reade Streets, N. Y.

Lovegrove & Co.

125 N. 4th Street,

PHILADELPHIA, PA.

Manufacturers of

Boilers & Engines.

Engines all styles, on Hand and made at Short Notice.

Vertical Engine.

Send for Price Lists of Engines, Boilers, &c.

Positive transmission. Stands **Exposure.** **Noiseless** in service.

NO Friction. Tension. Stretching.

Runs **Fast** or **Slow,** on all size wheels. Runs **Perpendicularly.**

For carrying **Buckets** and **Attachments** it has no equal.

Is a **Profitable Substitute** for Belting, Shafting, Gears and Ropes.

Adapted to all kinds of **Machinery.** Finds various uses in **Mills, Mines, &c.**

☞ Plans for any purpose furnished on application. ☜

Send for new Catalogue and Price List for 1877.

EWART MANUFACTURING CO.,

89 Madison Street, CHICAGO.

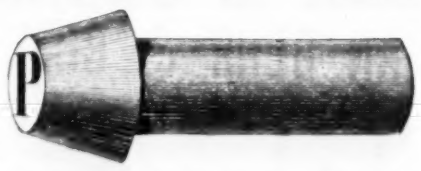
J. C. COONLEY, Prest. & Treas. W. D. EWART, Gen'l Sup't. J. F. POTTER Sec'y.

Philadelphia Spring & Rivet Works.

CHARLES B. ALLEN,

Manufacturer of **Cast Steel, Locomotive, Passenger** and **Freight Car**

SPRINGS.



Manufacturer of Best Quality of **Boiler, Bridge,** and **SHIP**

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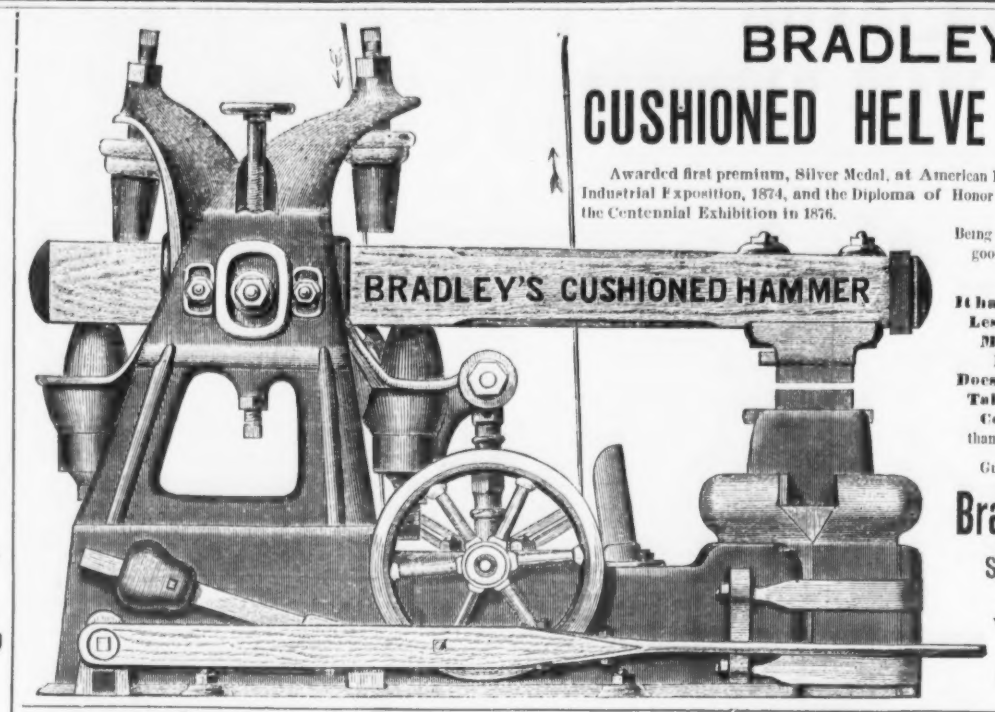

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Awarded first premium, Silver Medal, at American Institute Fair, 1873, Cincinnati Industrial Exposition, 1874, and the Diploma of Honor and Grand Medal of Merit at the Centennial Exhibition in 1876.

Being the highest award given any goods of their class in America or Europe.

It has More Good Points,
Less Complication,
More Adaptability,
Larger Capacity,
Does More & Better Work,
Takes Less Power,
Costs Less for Repairs,
than any Hammer in the World.

Guaranteed as Represented.

Bradley Mfg. Co

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(Established 1832.)

Western Office, *22 S. Canal St., Chicago, Ill.*

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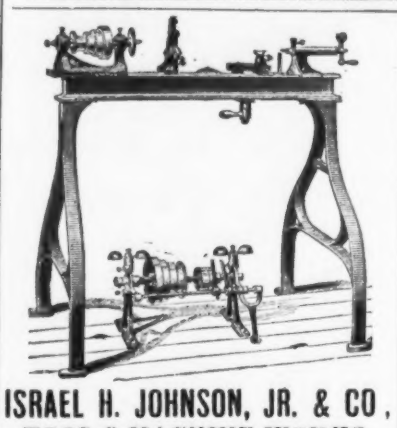

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Manufacturers of Engine, Brass Finishers', Wood Turners', Amateurs' and Jewelers' **LATHES,** Slide Rest, Screw Machines, Turret Heads, Screw Presses, Screw Clamps, Lathe Carriers, &c.

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We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address.

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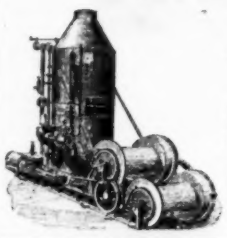

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Adapted for Mines, Dock Building, Pile Driving, Quarries, &c.

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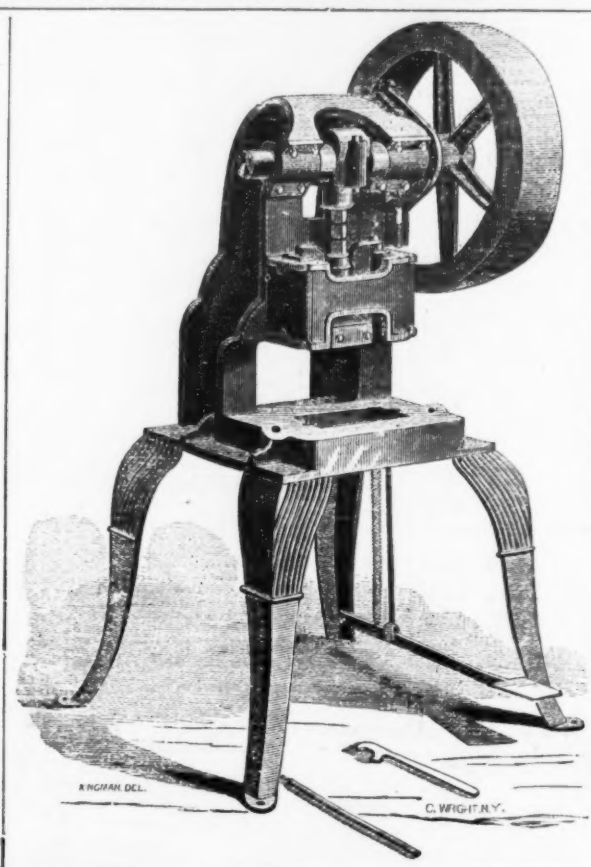

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PRESSES, DIES, & SPECIAL MACHINES,

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OFFICE AND WORKS:

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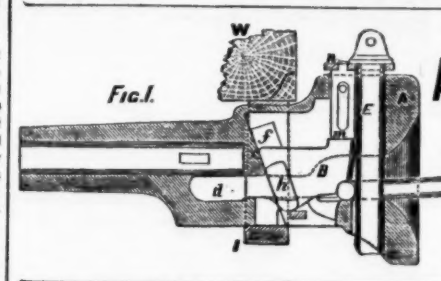
(Double and Single Gate, ⅜ in. to 48 in.—outside and inside Screws, Indicator, &c.) for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.



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Automatic Car Coupler.

Adopted on many of the leading railways, and approved wherever used.

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For particulars address the Patentee,

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Drills for Coes, Worcester, Hunter and other Hand Drill Presses. Beach's Patent Self-Centering Chucks, Center and Adjustable Drill Chucks, Solid and Shell Reamers. Drill Grinding Machines. Taper Reamers, Milling Cutters and Special tools to order.

All Tools exact to Whitworth Standard Gauges.

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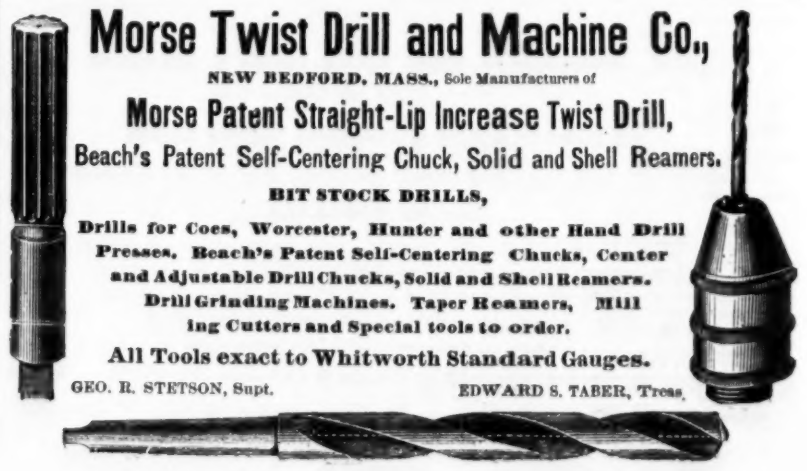

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American".....per lb. 9c; dis 20 %
Augers.—Watrous Shp.....dis 10 %
L'Hommedieu Shb.....dis 30 %
Axes.—Blue Jacket.....$ 9 00
Racer.....8 00
Red Cross, Handled.....10 50
" " Boy's.....9 00
Blue Jacket " " 10 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2 50, B (No. 1) $2 00, C (No. 2) $1 50 ₩ doz
Blind Hinges.—Orr or Washburn's..₩ hun'd sets $8
Blind Fasts.—
Orr or Washburn's.....per hundred set $6 00
Bolts.—Carriage, Phila.....dis 60&20 %
Carriage, Common.....dis 75&10 %
Borax.—Best Refined.....₩ lb 11c
Borers.—Angle, Backus'.....dis 30 %
Boring Machines.—Angle.....each $4 50
Common, Snell's quality.....each 3 50
Braces.—Barber's.....dis 40&5 %
Backus'.....new list 50&10
Spofford's.....dis 50 %
Bracket
Saw Frames, with patterns complete.....₩ doz $6 00
Saws....." 88
Saw Frames, Centennial....." 3 50
Star Bronzed.....new list net
Star Japanned.....new list net
Store Shelf.....new list net
Brass Faucets.—L. F. & C.....dis 40 %
Brushes.—Horse, Patent Metallic.....per doz. $4 50
Butts.—Union Drilled Loose Joint...dis 45, 12½&10 %
" " Wire Fast Joint, dis 25, 12½&10%
" " Acorn Loose J't, dis 45, 12½&10 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps
.....revised list, dis 25 %
Wrought Narrow Butts.....reduced, dis 40 %
Cards.—
Curry Cards, No. X, per doz., 40 c.....dis 30 %
Horse " No. X, " 2 00.....dis 30 %
Wool " No. 8X, " 2 50.....dis 15 %
Cotton " No. 10, " 3 50.....dis 10 %
Cartridges.—U. S. Cartridge Co.....dis 60 %
Chisels.—"Buck Bros." Shank Goods.....dis 30 %
Socket.....dis 25 %
Compasses and Dividers.—Bemis'.....dis 40 %
P. S. & W.....dis 30 %
Cordage.—Manila (usual trade dis.).....₩ lb 14½c
Corn Hooks......per doz $2 25
Crow Bars.—Soft Steel.....₩ lb. 9c
Cow Ties......dis 30 %
Dividers.—Cook's Nickel Plated.....dis 15 %
Door Springs.—Mosciey—

Per doz.	$9 00	12 00	15 00	18 00	24 00
No.	0	1	2	3	

Torrey's.....42½c
Gem.....dis 10 %
Drills.—Whitney's with Chucks.....$12 50
Emery.—Alden.....₩ lb 7c
Wellington Mills.....₩ lb 10c
Files.—American.....dis 30 %
Nicholson, new list.....dis 30 %
Wheeler, Madden & Clemson.....$ to $; 10 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 62, 4, $1 88; 4½, $2 13; 5, $2 50
Hammers.—Maydole—new reduced list.....dis 15 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $9 45.....dis 35 %
M., B. & D., solid cast steel, bell face, No. 1 $11; 1½, $9 75.
Hammond—new reduced list.....dis 15 %
Hangers & Rollers.—Anti-Friction.....dis 40 %
Climax.....dis 40 %
Acme Rollers.....dis 40 %
Hatchets.—Underhill Edge Tool Co.....dis 25 %
C. F. Dowse, warranted Cast Steel—
Shingling.....3, $4 75; 1, $5 75; 2, $5 75
Claw.....1, 5 75; 2, 6 25
Lathing.....1, $5 50
Axe Pattern.....1, $7 00; 2, 7 50
Broad.....0, $5 75; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75
5, $12 75; 6 $14 75
Hinges.—Strap and T Stanley Works.....60& 5
Plate, Loose and Fast Joint.....₩ lb 5c
Wrought Screw Hook.....₩ lb 5c
Knobs.—Imp. Extension Silver'd Glass.....₩ doz $8 00
Lanterns.—Tubular No. 0.....$ 9 50
Guarded, No. 74, (with kerosene oil and candle burners).....5 50
Lead.—Sheet, 9½c.; Pipe, 9c.....dis 10 %
Locks.—Norwalk Lock Co.....dis 35 %
Mattocks.—
K. F. & Co., axe finish, long cutter.....$11 50—net
Short cutter.....11 00—net
Meat Cutters.—"Miles's" Challenge.....dis 30 %
No. 1, $22 00; 2, $30 00; 3, $40 00.
Metal.—Babbitt.....No. 1, 35c; 3, 25c; 5, 15c ₩ lb.
Nails.—10d and larger, 25c. dis in lot. of 100 kegs..$2 75
Nail Pullers.—Little Giant—Small.....per doz., $22 00
Little Giant—Large.....30 00
Padlocks.—Wheox.....dis 33½&5 %
Picks.—R. F. & Co., Solid Eyes.....5 to 6 6 to 7
.....$9 00 $9 50
Pins.—Universal Hatand Coat all wood—
2 in.....₩ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Pumps.—Auburn Tool Co.....dis 40 %
N. Y. Tool Co.....dis 40 %
Plated Ware.—Rogers Bros.....dis 40 %
Pocket Knives.—Conn. Cutlery Co.....new net list
American Shear Co.....new net list
Plumb & Levels.—Stanley.....dis 60&10 %
Pulleys.—Axle.
Frame Pol. Wheel.....No. 15, 1¾ in., 25c.; 16, 2 in., 30c.
Common Axle.....No. 18, 1¾ in., 34c.; 26, 2 in., 40c.
Milled Axle.....No. 2, 1¾ in., 42c.; 2, 2 in., 50c.
Nashua Pat. Axle Bronzed Face...1¾ in., 30c; 2 in., 36c
Cast Steel Axle.....2 in., $1 00
Pulley Blocks.—"Best Boston Make".....net
Rail Barn Door.—For Novelty and Anti-Friction Hangers.....per foot 7c.. dis 40 %
Refrigerators.—Heinz Patent.....dis 20 %
Rivets.—Black.....dis 50 %
Carriage, oval head. Nos. 3, 4, 5, 6, 7, 8.. dis 35 %
13 13 14 14 15 16c ₩ lb
Sad Irons.—Bliss & Drake.....₩ lb 3½c
Sand Paper.....dis 15 & 5 %
M. B. & D.....0 to 2, $4 25; 2 to 3, $5 75
Saws.—*Hand and Panel*—
X Cut, Wheeler, Madden & Clemson.....per ft., 35c
" Champion....." 45c
" Lightning....." 45c
" Great American....." 5c
Wood Saws, Welsh & Griffith.....₩ doz $12 00
Wheeler, Madden & Clemson's, same list as "Diston's".....dis. 20 %
Diston's.....dis. 20 %
Saw Horses.—Extra.....₩ doz $2 25
Folding....." 3 50
Screws.—Am. Screw Co., new list Sept. 1st.....dis 60 %
Aiken's.....dis 60 %
Scythe Stones.—
"Willoughby Lake," first quality.....₩ gross $6 50
" second quality.....$ 3 00
Shovels.—O. Ames.....dis 50 %
M. B. & D.....dis 30 %
Spading Forks.—W. C. & Co.....dis 40 %
Tools.—Aiken's Pattern.....₩ doz $5 00
Aiken's Genuine, $12.....dis 40 %
" " Saw Sets, $18.....dis 40 %
Traps.—Oneida.....dis 25 %
Blake's.....dis 40 %
Vises.—R. F. & Co.'s Solid Box. Blacksmith.....₩ lb 13c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
"Howards." Parallel.....dis 25 %
Wardrobe Hooks.—Wire to drive.....₩ gross $1 00
Weights.—Window Weights.....₩ lb 1½
Wedges.—Axe.....₩ doz $1
Wire.—
Eureka in spools. No. 28 to 40 assorted...₩ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green. 4½c
Drab or Black.....₩ ft 1½c
Wrenches.—Genuine Wrenches, G. A. Coes..d's 40 & 10
Wringers.—Universal XX No. 2.....₩ doz $65 00
Novelty, No. 10....." 63 00
" No. 2....." 68 00
" No. 22....." 70 00
Excelsior A, with beuch....." 84 00
" E, set tubs....." 72 00
Eureka....." 57 00
Welcome....." 60 00
Wilmington, Cooley & Co.—Hoes, Rakes, Forks &c. dis 40 %. Special rate for Export.

ST. LOUIS.

Corrected weekly by Semple & Birge Mfg. Co

Animal Pokes......$7 50 ₩ doz. net
Apple Parers.—Conqueror.....₩ doz $7 75
Hudson's Rotary....." 7 25
Axes.—Wm. Mann's, Red Warrior.....₩ doz 9 75
"C. Marshall"....." 9 25
Handled....." $5 extra
Double Bitted....." 19 50
Hunt's....." 12 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent, Swelled Taper, Plain Taper and Concord Axles.....dis 25&5 %
Common Axles (Pat. Lubricating), 1¼ inch and upward.....₩ lb. 6c
do. less than 1¼ inch....." 6½c
Babbitt Metal.—
Nos.....4 3 2 1 A 1 Genuine.
9½ 11 16½ 20 31 34c ₩ lb.
Bellows.—Best St. Louis make.....40c ₩ in. net
Bells.—Troy, Church, School and Farm Bells..₩ lb 35c
"Improved Amalgam Bronzed," 15 in., $2 00; 17 in., $2 50; 19 in., $4; 21 in., $5; 24 in., $14; 27 in. $19 00
Belting.—"Boston Belting Co.'s" Rubber.....dis 50&10 %
Bradford & Sharp's" Oak-Tanned Leather.....dis 47 %
Boilers.—Farmer's Profit Feed Boilers.....dis 20 %
" Caldrons.....dis 25 %
" Sugar Kettles.....dis 30 %
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 20 & 10%
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint.....dis 25, 12½&10 %
Broad Fast Joint.....dis 25, 12½&10 %
" Loose " .....dis 45, 12½&10 %
Reversible.....dis 20, 12½&10 %
" Japanned and Silver Tipped..dis 50, 12½&10 %
Loose Joint "Acorn" " " .....dis 15, 12½&10 %
Churns.—Julian, No. 2, $7 00; No. 3, $7 50; No. 4, $8 50.....dis 25 %
Cider Mills.—
American Senior, $2 00; Am. Junior, $18 00.....net
Corn Drill.—Campbell's Patent, $19 00.....net
Corn Knives.—Dunn Edge Tool Co.'s Chp...₩ doz 4 50
Seymour Mfg. Co.'s Solid Steel Back.....4 50
Corn Sheilers.—Sandwich Mfg. Co.'s—
Power Shellers.....dis 10 %
Hand Shellers.....special rate
Corn Stalk Cutters.
Pekin Single Row Machine, $50.....dis 20 %
" Double Row " $5.....dis 20 %
Cotton Gins.—Carver, with 10 in. Saws, $15 a Saw. net
12 in. Saws, $4 00 a Saw.....net
Crow Bars.—Steel Pointed.....₩ lb 6c
Drag Saw Machines.
Culver's Dod Drag Saw.....dis 15 %
Excelsior Drag Saw with Log Trucks.....dis 12½ %
Running Mills.—Nash & Cutt's.....dis 25 %
Feed Cutters.—Improved Buruick National...dis 20 %
Sanford No. 1, $10 00; No. 4, $8 00.....net
Bowman's Lever Cutter, $6 50.....net
Files.—Black Diamond, Mill.....$5 00 & currency
" Bastard.....5 00 & currency
" Taper.....5 00 & currency
Forges and Blowers.
Keystone Portable Forge Co.'s.....new list
Forks and Hoes.
Auburn Mfg. Co.'s Hay and Manure Forks....dis 40 %
" Handled Hoes.....dis 40 %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe.....dis 20 %
" Planet Drill, Nos. 2 and 3.....dis 20 %
" Combined Drill and Wheel Hoe.....dis 20
Grinding Mills.—Challenge Feed Mills.....dis 10 %
Sedgebeer's Nonpareil Mills.....dis 15 %
Bradford's French Burr Mills.....net list
Hammers.—Masons' Hammers.....₩ lb 10c
Smiths' Hand.....20c
Handles.—No. 1 Fork, Hoe and Rake.....dis 20 %
No. 2 Fork, Hoe and Rake.....dis 30 %
Ax, Pick, Sledge and Small Handles.....net list
Hay and Cotton Presses.
Dederick's Railroad.....net list
" Perystatic.....net list
Hay Knives.
Dunn Edge Tool Co.'s.....₩ doz $12 00 net
Lightning (Weymouth's Patent).....₩ doz $6 00
Horse Hay Fork.—Nellis' Harpoon...$8 50 each net
Horse Nails.—National Patent Pointed.....ace rates
National Patent Pointed, extra finished.....20c " "
Horse Powers.—Pitts or Carey's Patent.....dis 10 %
Wheeler's Railway.....dis 10 %
Sandwich Lever.....dis 10 %
Hose.—
Boston Belting Co.'s Rubber Medium Sizes..dis30&10
" " S. Stz. Hydrat't..dis 40
Mattocks and Grub Hoes.
Klein, Logan & Co.'s Mattocks.....₩ doz $11 75 to 13
" Grub Hoes, oval eye " 8 50 to 9
Money Drawers.—
Pierpont & Co.'s Excelsior.....per doz $84 00 net
Nails.—Wheeling Riverside Brand.....$2 80 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 30 %
Boston Belting Co.'s Rubber, Pure.....dis 25&5 %
" " No. 1 Plaited.....dis 40 %
" " Round and Square....dis 10&10 %
Picks.—Railroad and Clay.....₩ doz $8 50 to 10 00
Coal.....$ 7 45 to 8 00
Pick.....11 00 to 13 85
Stone.....14 00 to 14 90
Tamping.....14 75 to 15 25
Miners Drifting.....15 00 to 11 75
Plows.—Avery's Cast and Steel.....dis 30 %
Avery Sulky Plow.....dis 20 %
Collins Cast Cast Steel.....new list net
Pekin Steel.....dis 25 %
Plow Suits.—Buckeye.....$29 25 net
Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32.....dis 20 %
Pulleys.—5 inch.....per doz $3 70 net
4 inch.....per doz 2 50 net
Nellis' Patent.....dis 20 %
Pumps.—St. Louis Farm. Patent Metal Lined..dis 30 %
Rakes.—Advance Paddock Sulky.....each $5 00 net
St. Louis Levelling 14 tooth.....4 45 net
" " 16 " .....4 65 net
" Hand Hay Rake.....per doz $2 50
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives.....dis 40 %
" " Sections.....dis 40 %
Road Scrapers.—Steel.....each $2 50 net
Cast Iron.....dis 10& 5 %
Saws.—Curtis & Co.....dis 25 %
Scythes.—Dunn Edge Tool Co.'s.....dis 30 %
Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00
Extra Indian Pond.....4 50
Premium.....10 50
Diamond Grit.....12 00
Shovels and Spades.—Groom Shovel Co.....dis 40 %
Grain Scoops—Patent Cor'd Straps Groom Shovel Co.....dis 40 %, and 50c per doz. extra
do. M. Rowland & Co., dis 30 & and 35c " "
do. O. Ames & Son, dis 25½ & and 35c " "
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Pounding.....₩ lb 12c net
Solid Cast Steel....." 10c net
Spaths and Cradles.—Seymour Mfg. Co.'s.....₩ pair, $1 00
Sorghum Machinery.—Bell Cane Mills.....dis 25 %
Scantlin's Seamless Evaporators.....dis 15 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express.....₩ lb. 14c
Blue Steel Springs.....₩ pair, $1 00
Thimble Skeins.—Whitewater's.....dis 40&10 %
Vises.—Wilson Mfg. Co.'s.....₩ lb. 14½c
Wheelbarrows.—Champion Iron Wheel.....₩ doz 42 50
Champion Wood Wheel.....₩ doz 29 00
" Garden.....₩ doz. 36 00
Wagons.—Whitewater Farm Wagons—
Thimble Skein.....3 in. $74; 3½ in. $78 3¾ in. $79
Iron Axle.....1¼ in. $78; 1⅝ in. $81; 1¾ in.
Wire Rope Ties.—Buckeye Double Twist.....net list
Dederick Adjustable.....net list

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. S. Hunt & Co.)

Tin Plate.

IC, 10x14, Best Char.	$ 8 00	IXXX, 14x20, "	$15 50
IX, 10x14, "	10 50	IXXXX, 14x20, "	19 00
IC, 12x?, "	8 00	IC, 20x28, "	10 00
IX, 12x12, "	10 50	IX, 20x28, "	12 00
IC, 14x20, "	8 00	IXX, 20x28, "	25 00
IX, 14x20, "	10 50	IC, 14x31, Best Roof	31 00
IC, 12x24, "	9 00	IX, 14x.0, "	7 50
DX, 13½x17, "	10 50	IC, 20x28, "	10 00
DX X, 14½x17 "	13 00	IX, 20x28, "	15 50
IX, 14x14, "	19 00	IC, 10x14, Best Coke	3 00
IXX, 14x14, "	22 00	IC, 14x20, "	7 00
IXX, 14x20, "	13 00	IC, 20x28, "	11 50

Sheet Iron.

	Com'n.	Sm'th.	Ref'd	Gunn's
				Sm'th
No. 16 to 20	3 4c	4 4c	6c	7 4c
No. 22 to 24	3 5c	4 4c	6c	7 5c
No. 26	3 5c	4 5c	6½c	8 1c
No. 27	4 c	4 5c	6½c	8 2c

Genuine Russia Iron.

Perfect—No. 9, 10, 11, 12.....per lb. 14c
No. 1 Stained—No. 9, 10, 11, 12.....per lb. 12c
Tare 22 lbs. to Bdle. For less than Bdle. add 1c. ₩ lb.
Patent Finished Iron.
No. 24 to 27, A quantity.....per lb. 12c
" B " 11c
For less than Bdle. add 1c. per lb.
Galvanized Sheet Iron.
Juniata, or 1st quality.....dis 55 %
Block Tin.
Straits, Large Pigs.....23c | Straits, Small.....24c
Eng. Ref'd, Large Pig.....23c | Bar.....23c
do Small.....24c |
Solder.
Extra in Bars.....17c | No. 2, in Bars.....13c
No. 1, in " .....14c | in Bars.....13½c
Pig Lead—Pigs.....7c |
Antimony.....18c
Bismuth.....$3 00
Nickel.....3 50
Crucibles.—Dixon's.....₩ No. 5c
Babbit Metal.

No. 1	₩ lb. 30c	No. 3	₩ lb 14c
" 2	" 18c	" 4	" 9c

Copper.
Brazier's, 30x60, 14 to 100 lbs. Sheets.....32c
" " 10, 11 & 12 lbs., " 34c
" " 8 and 9 lbs. " 36c
" " 6 and 7 lbs. " 38c
Tinned, 14x48, 14 and 16 oz.....12c
Planished, 14x48, 14 and 16 oz.....38c
" Boiler Sizes, 14 and 16 oz.....41c
Gutter Copper, 30x74, 10 and 12 lb. Sheets.....34c
" 20x77, 14 lb. Sheets.....32c
" 24x72, 10 and 12 lb. Sheets.....34c
" 24x77, 14 lb. Sheets.....32c
Reservoir Copper, 16x60 and 18x60.....32c
Bar Copper, Square and Round, ¼ to 1¼ inch.....33c
" " " ⅜ inch.....30c
Copper Bottoms.....34c
Copper Nails.....40
Brass.
Roll, No. 10 to 28, 12 in. in width.....30c
" 30, 12 in. in width.....31c
" 3½, 16 " 36c
" 3½, 16 " 37c
" 36, 16 " 38c
Plates, No. 40, 6 " 38c
Brass and Copper Wire.

	Brass.	Copper.		Brass.	Copper
No. 0 to 20	34c	45c	No. 24	39c	50
" 21	37c	46c	" 25	42c	3
" 22	36	47c	" 26	44c	56c
" 23	37c	48c	" 27	46c	60c

Brass Spring Wire, 2c. ₩ lb advance.
Brass Tubing.
Plain to No. 20.....45c | 5-16 inch.....50c
⅜ inch.....50c | ½ " 80c
Copper Rivets and Burs.....dis 10 %
Brass Kettles.....₩ lb 45c
Sheet Zinc.—600 lbs. cask.....7½c
250 lbs. cask.....8½c
Sheet.....8½c
Wire.—Iron, Market.....dis 45 %
Iron, Coppered Market.....dis 40 %
Fence, Nos. 5, 6 and 7.....₩ lb 4½c
Trellis, Nos. 10 and 11.....5½c
" No. 12.....5½c
Hay Baling, Charcoal, No. 10 and 11.....5½c
" No. 12.....5½c
Broom, Tinned, Nos. 18 to 22.....17c
Fence Staples.....per keg of 100 lbs. $6 25
Per lb.....6½c
Iron Rivets.—Black, papered.....dis 40 %
Tinned, papered.....dis 40 %
In bulk.....5-16 ⅜ 5-16 ⅜ in. diam.
9½c 8½c 8½c 6½c per lb.
Sad Irons......₩ lb 3½c
Enameled Kettles.—Standard Mfg. Co.....dis 55 %
Enameled Sauce Pans.
Standard Mfg. Co.....dis 40 %
Enameled Boilers.—Standard Mfg. Co.....dis 0 %
Dripping Pans.—Smooth Iron.....₩ lb 10c
Geneva Fluters.....per doz $15 00
Monroe Fluters.....14 00
Stove Polish.—Dixon's.....per gross 6 00
Gem.....4 50
Japanese.....3 50
Dixon's, in bulk.....₩ lb 10c
Coffee Mills.—Parker's.....dis 20 %
Granite Iron Ware.....dis 25 %
Spoons.—New list.....dis 10 %
Refined Iron Ware.....dis 20½ %
Plain Stamped Ware.....dis 40 %
Japanned Ware.—St. Louis list.....dis 40 %
Fry Pans.....dis 10 %
Ears.....dis 30 %

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Manufacturers of all kinds of

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All headed work assorted by our new

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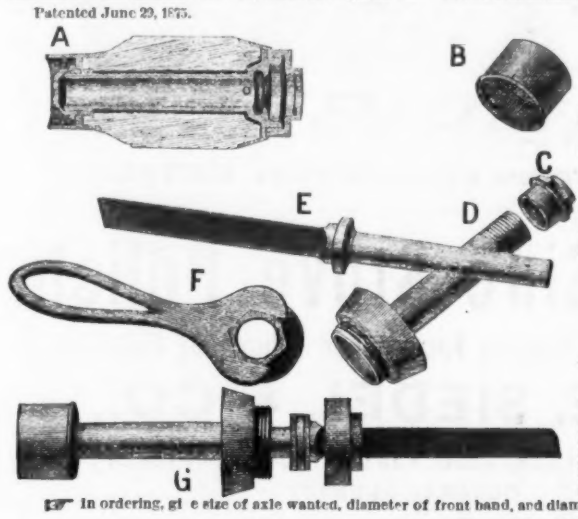
HENDRY'S PATENT CARRIAGE AXLE.

Patented June 29, 1875. Patented June 13, 1876



DESCRIPTION,

A, Section of hub complete, showing oil-chamber o.
B, Front band.
C, Nut which screws on to box D, and confines box D and band B to the hub.
D, Box and back band in one piece.
E, Axle.
F, Wrench in place on back nut.
G, Axle with back nut unscrewed from box, and both slipped from the collar, showing leather washer each side of collar, and front band in place.

Points of Excellence.

No oil can come in contact with the wood of the hub.
No oil can escape.
No dirt, gravel or water can work.
It holds the wheel in a superior manner. It is easier to oil than a common axle. It is adapted to any kind of a wheel. It requires no wedging to box the wheel. It will run **500 to 1000 miles at a single oiling.**

☞ In ordering, give size of axle wanted, diameter of front band, and diameter of hub.

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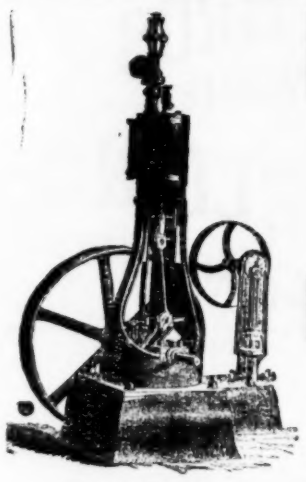

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Engines all styles, on Hand and made at Short Notice.

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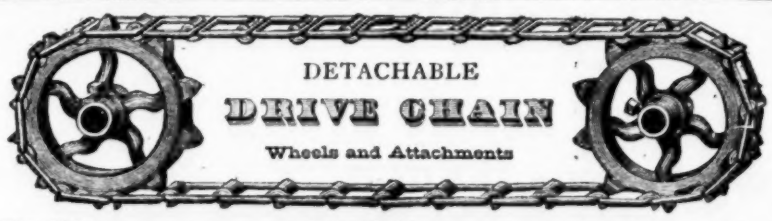

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For carrying **Buckets** and **Attachments** it has no equal.

Is a **Profitable Substitute** for Belting, Shafting, Gears and Ropes.

Adapted to all kinds of **Machinery.** Finds various uses in **Mills, Mines, &c.**

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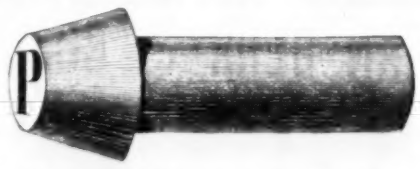

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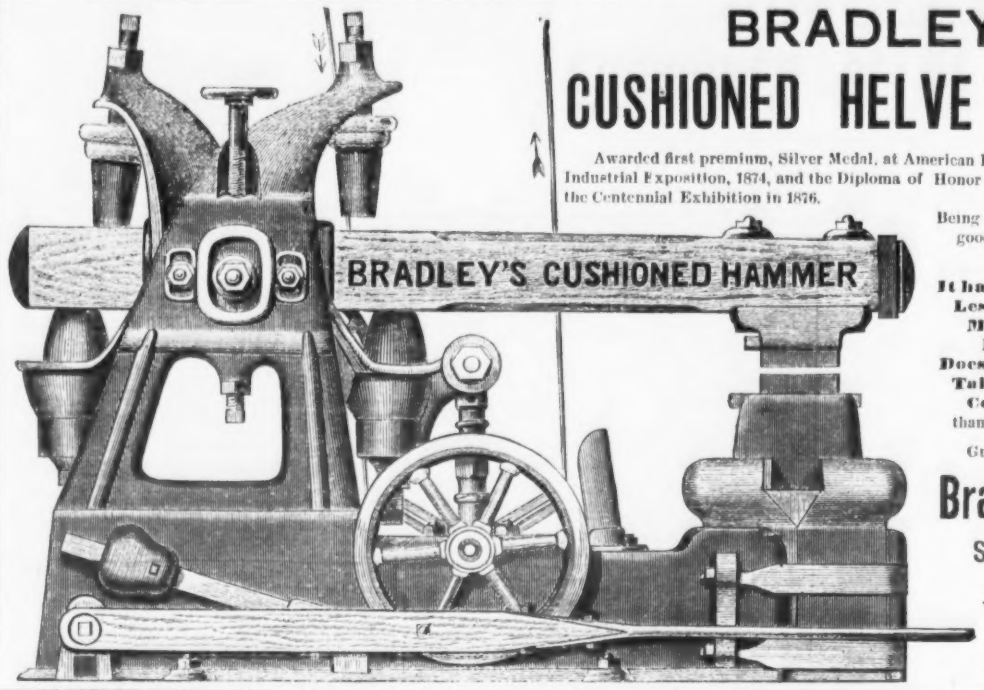

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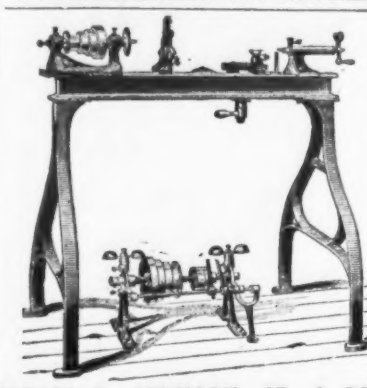

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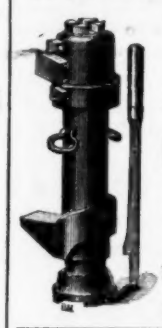

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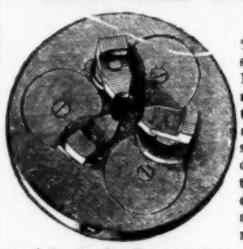

We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address,

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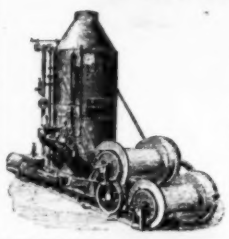

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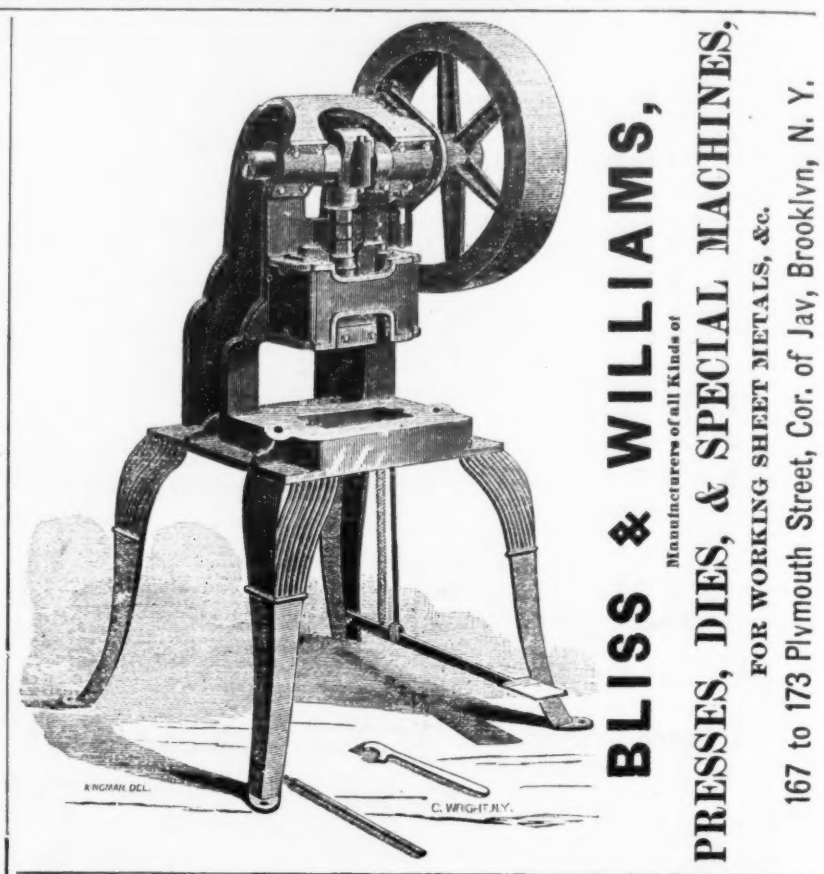

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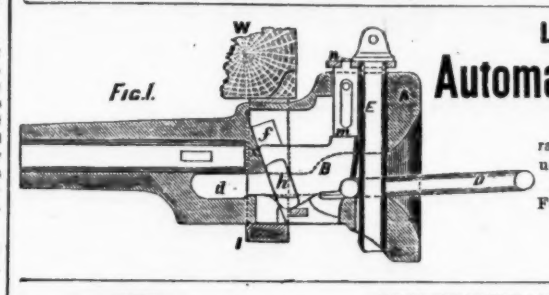

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Anvils.—"Eagle American".....per lb. 9c; dis 20 %
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L'Hommedieu Ship.....dis 30 %
Axes.—Blue Jacket.....9 00
Racer.....8 00
Red Cross, Handled.....10 50
" " Boy's.....9 00
Blue Jacket " " 10 00
Axe Handles.—Wadleigh's Oak—
A (Extra, $2 50, B (No. 1) $2 00, C (No. 2) $1 50 ₱ doz
Blind Hinges.—Orr or Washburn's..₱ hun'd sets $8
Blind Fasts.—
Orr or Washburn's.....per hundred set $6 00
Bolts.—Carriage, Plain.....dis 60&20 %
Carriage, Common.....dis 75&10 %
Borax.—Best Refined.....₱ lb 11c
Borers.—Angle, Backus'.....dis 30 %
Boring Machines.—Angle.....each $4 50
Common. Snell's quality.....each 3 50
Braces.—Barber's.....dis 40&5 %
Backus'.....new list 50&10
Spofford's.....dis 50 %
Bracket
Saw Frames, with patterns complete.....₱ doz $6 00
Saws....." 88
Saw Frames, Centennial....." 3 50
Star Bronzed.....new list net
Star Japanned.....new list net
Store Shelf.....new list net
Brass Faucets.—L. P. & C.....dis 40 %
Brushes.—Horse, Patent Metallic.....per doz. $4 50
Butts.—Union Drilled Loose Joint....dis 45, 12½&10 %
" " Wire Fast Joint, dis 25, 12½&10%
" " Acorn Loose J't, dis 45, 12½&10 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps.....revised list, dis 35 %
Wrought Narrow Butts.....reduced, dis 40 %
Cards.—
Carry Cards, No. X, per doz., $0 75.....dis 30 %
Horse " No. X, " 0 80.....dis 30 %
Wood " No. XX, " 2 50.....dis 15 %
Cotton " No. 10, " 3 50.....dis 10 %
Cartridges.—U. S. Cartridge Co.....dis 60 %
Chisels.—"Buck Bros." Shank Goods.....dis 30 %
Socket.....dis 25 %
Compasses and Dividers.—Bemis'.....dis 40 %
P. S. & W.....dis 30 %
Cordage.—Manila (usual trade dis.).....₱ lb 14½c
Corn Hooks.....per doz $2 25
Crow Bars.—Soft Steel.....₱ lb. 9c
Cow Ties.....dis 30 %
Dividers.—Cook's Nickel Plated.....dis 15 %
Door Springs.—Moseley—

Per doz.	$9 00	12 00	15 00	18 00	24 00
No.	0	1	2	3	4

Torrey's.....$2 50
Gem.....dis 10 %
Drills.—Whitney's with Chucks.....$12 50
Emery.—Alden.....₱ lb 7c
Wellington Mills.....₱ lb 10c
Files.—American.....dis 30 %
Nicholson, new list.....dis 30 %
Wheeler, Madden & Clemson.....₱ to ₤ 10 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 62; 4, $1 88; 4½, $2 13; 5, $2 50
Hammers.—Maydole—new reduced list.....dis 15 %
M., B. & D., sound cast steel, adze eye, No. 1, $10; 1½, $7 50.....dis 25 %
M., B. & D., solid cast steel, belt face, No. 1 $11; 1½, $9 75.....
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Climax.....dis 30 %
Acme Rollers.....dis 40 %
Hatchets.—Underhill Edge Tool Co.....dis 25 %
C. F. Dowse, warranted Cast Steel—
Shingling.....0, $4 75; 1, $5 25; 2, $5 75
Claw.....1, 5 75; 2, 6 25
Lathing.....1, $5 50
Axe Pattern.....1, $7 00; 2, 7 50
Broad.....0, $5 75; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75; 5, $12 75; 6 $14 75
Hinges.—Strap and T Stanley Works.....60&5
Plate, Loose and Fast Joint.....₱ lb 25c
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Knobs.—Imp. Extension Silvered Glass.....₱ doz $8 00
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Locks.—Sargent's Corbin Lock Co.....dis 35 %
Mattocks.—
K. P. & Co., axe finish, long cutter.....$11 50—net
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Nails.—10d and larger, 25c. dis in lots of 100 kegs..$2 75
Nail Pullers.—Little Giant—Small.....per doz., $2 00
Little Giant—Large....." 3 00
Padlocks.—Wilcox.....dis 33½&5 %
Picks.—R. P. & Co., Solid Eyes.....5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hatand Coat all wood—
2 in.....₱ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Planes.—Auburn Tool Co.....dis 40 %
N. Y. Tool Co.....dis 40 %
Plated Ware.—Rogers Bros.....dis 40 %
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American Shear Co.....new net list
Plumb & Levels.—Stanley.....dis 60&10 %
Pulleys.—Axle.
Frame Pol. Wheel.....No. 15, 1¼ in., 25c.; 16, 2 in., 30c.
Common Axle.....No. 18, 1¾ in., 34c.; 20, 2 in., 40c.
Milled Axle.....No. 2, 1¾ in., 42c.; 3, 2 in., 50c.
Nashua Pat. Axle Bronzed Face...1¾ in., 30c.; 2 in., 36c
Cast Steel Axle.....2 in., $1 00
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Rail Barn Door.—For Novelty and Anti-Friction Hangers.....per foot 7c.. dis 40 %
Refrigerators.—Heinz Patent.....dis 20 %
Rivets.—Black.....dis 50 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8, dis 35 %
13 13 14 14 15 16c ₱ lb
Sad Irons.—Bliss & Drake.....₱ lb 3½c
Sand Paper.....dis 15 & 5 %
M. B. & D.....0 to 2, $4 25; 2 to 3, $4 75
Saws.—*Hand and Panel*—
X Cut, Wheeler, Madden & Clemson.....per ft., 35c
" Champion....." 45c
" Lightning....." 45c
" Great American....." 50c
Wood Saws, Welsh & Griffith.....₱ doz $12 00
Wheeler, Madden & Clemson's, same list as "Disston's".....dis. 20 %
Disston's.....dis. 20 %
Saw Horses.—Extra.....₱ doz $2 25
Folding....." 3 50
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Aiken's.....dis 60 %
Scythe Stones.—
"Willoughby Lake," first quality.....₱ gross $4 50
" " second quality....." 3 00
Shovels.—O. Ames.....dis 30 %
M. B. & D.....dis 30 %
Spading Forks.—W. C. & Co.....dis 40 %
Tools.—Aiken's Pattern.....₱ doz $5 00
Aiken's Genuine, $12.....dis 40 %
" " Saw Sets, $18.....dis 40 %
Traps.—Oneida.....dis 25 %
Blake's.....dis 40 %
Vises.—K. P. & Co.'s Solid Box, Blacksmith....₱ lb 13c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
"Howards" Parallel.....dis 25 %
Wardrobe Hooks.—Wire to drive.....₱ gross $1 00
Weights.—Window Weights.....₱ lb 1½
Wedges.—Axe.....₱ doz 50
Wire.—
Eureka in spools, No. 28 to 40 assorted...₱ gross $3 50
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Drab or Black.....₱ ft 4½c
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Wringers.—Universal XX No. 2.....₱ doz $66 00
Novelty, No. 10....." 63 00
" No. 2....." 66 00
" No. 22....." 70 00
Excelsior A, with bench....." 84 00
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Eureka....." 57 00
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"C. Marshall"....." 9 25
Handled....." $5 extra
Double Bitted....." 19 50
Hunt's....." 12 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent, Swelled Taper, Plain Taper and Concord Axles.....dis 25&5 %
Common Axles (Pat. Lubricating), 1¼ inch and upward.....₱ lb., 6c
do. less than 1¼ inch....." 6½c
Babbitt Metal.—

Nos.	4	3	2	1	A 1	Genuine.
	9½	11	16½	20	31	34c ₱ lb.

Bellows.—Best St. Louis make.....4 00 ₱ in. net
Bells.—Troy, Church, School and Farm Bells..₱ lb 35c
"Improved Amalgam Bronzed." 15 in., $2 00; 17 in., $2 50; 19 in., $4; 21 in., $5; 24 in., $14; 27 in., $19 50
Belting.—"Boston Belting Co.'s" Rubber.....dis 50&10 %
Bradford & Sharp's" Oak-Tanned Leather.....dis 40 %
Boilers.—Farmer's Pronf Feed Boilers.....dis 20 %
" Caldrons.....dis 25 %
" Sugar Kettles.....dis 30 %
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 10 & 10%
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint.....dis 25, 12½&10 %
Broad Fast Joint.....dis 35, 12½&10 %
" Loose " .....dis 45, 12½&10 %
Reversible.....dis 40, 12½&10 %
" Japanned and Silver Tipped..dis 50, 12½&10 %
Loose Joint "Acorn" " " .....dis 45, 12½&10 %
Churns.—Julian, No. 2, $7 00; No. 3, $7 50; No. 4, $8 50.....dis 25 %
Cider Mills.—
American Sentor, $2 00; Am. Junior, $18 00.....net
Corn Drill.—Campbell's Patent, $19 00.....net
Corn Knives.—Dunn Edge Tool Co.'s Clip...₱ doz 4 50
Seymour Mfg. Co.'s Solid Steel Back.....4 50
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers.....dis 10 %
Hand Shellers.....Special rates
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Pekin Single Row Machine, $20.....dis 20 %
" Double Row " $25.....dis 20 %
Cotton Gins.—Carver, with 10 in. Saws, $215 a Saw, net
12 in. Saws, $4 00 a Saw.....net
Crow Bars.—Steel Pointed.....₱ lb 6c
Drag Saw Machines.
Culver's 1 00 Drag Saw.....dis 15 %
Excelsior Drag Saw with Log Trucks.....dis 12½ %
Planing Mills.—Nash & Cutts'.....dis 25 %
Feed Cutters.—Improved Burdick National...dis 30 %
Sanford No. 1, $10 00; No. 2, $8 00.....net
Bowman's Lever Cutter, $6 50.....net
Files.—Black Diamond, Mill.....$5 00 ₤ currency
" Bastard.....5 00 ₤ currency
" Taper.....5 00 ₤ currency
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Keystone Portable Forge Co.'s.....new list
Forks and Hoes.
Auburn Mfg. Co.'s Hay and Manure Forks....dis 40 %
" " Handled Hoes.....dis 40 %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe.....dis 20 %
" Planet Drill, Nos. 2 and 3.....dis 20 %
" Combined Drill and Wheel Hoe.....dis 20
Grinding Mills.—Challenge Feed Mills.....dis 15 %
Sedgebeer's Nonpareil Mills.....dis 15 %
Bradford's French Burr Mills.....net list
Hammers.—Masons' Hammers.....₱ lb 13c
Smiths' Hand.....30c
Handles.—No. 1 Fork, Hoe and Rake.....dis 20 %
No. 2 Fork, Hoe and Rake.....dis 30 %
Ax, Pick, Sledge and Smalt Handles.....net list
Hay and Cotton Presses.
Dederick's Railroad.....net list
" Perpetual.....net list
Hay Knives.
Dunn Edge Tool Co.'s.....₱ doz $12 00 net
Lightning (Weymouth's Patent).....₱ doz 8c 10
Horse Hay Fork.—Nellis' Harpoon...$8 50 each net
Horse Nails.—National Patent Pointed.....20c rate
National Patent Polished, extra finished.....22c "
Horse Powers.—Pitts or Carey's Patent.....dis 10 %
Wheeler's Railway.....dis 10 %
Sandwich Lever.....dis 10 %
Hose.—
Boston Belting Co.'s Rubber Medium Sizes..dis 30&10
" " " S. Sz. Hydraulic..dis 40
Mattocks and Grub Hoes.
Klein, Logan & Co.'s Mattocks..₱ doz $11 75 @ 13
" Grub Hoes, oval eye " 8 50 @ 9
Money Drawers.—
Pierpont & Co.'s Excelsior.....per doz $38 00 net
Nails.—Wheeling Laverside Brand.....$2 80 rates
Packing.—Boston Belting Co.'s Rubber, Plain...dis 30 %
Boston Belting Co.'s Rubber, Pure.....dis 25&5 %
" " No. 1 Plain.....dis 40 %
" " Round and Square.....dis 10&10 %
Picks.—Railroad and Clay.....₱ doz $8 50 @ 9 00
Coal....." 7 45 @ 8 00
Pob....." 11 00 @ 13 85
Stone....." 14 00 @ 14 90
Tamping....." 14 75 @ 15 35
Miners Drifting....." 15 00 @ 16 75
Plows.—Avery's Cast and Steel.....dis 30 %
Avery Sulky Plow.....dis 30 %
Collins Cast Cast Steel.....dis 30 %
Pekin Steel.....dis net list
Plow Sulky.—Buckeye.....$29 25 net
Post Hole Augers.—Clark's Patent—
No. 1, ₱ doz. $24; No. 2, $30; No. 3, $32.....dis 20 %
Pulleys.—5 inch.....per doz $3 70 net
4 inch.....per doz 2 50 net
Nellis' Patent.....dis 20 %
Pumps.—St. Louis Farm, Patent Metal Lined..dis 30 %
Rakes.—Advance Paddock Sulky.....each $5 00 net
St. Louis Revolving 14 tooth.....4 45 net
" " 16 " .....4 65 net
" Hand Hay Rake.....per doz $2 50
Reaper Knives and Sections.
Geo. Barnes & Co.'s Knives.....dis 40 %
" " Sections.....dis 40 %
Road Scrapers.—Steel.....each $3 50 net
Cast Iron.....dis 10&5 %
Saws.—Curtis & Co.....dis 25 %
Scythes.—Dunn Edge Tool Co.'s.....dis 30 %
Scythe Stones.—No. 1 Hind's Pond ₱ gr's, $7 00
Extra Indian Pond....." 4 50
Premium....." 10 50
Diamond Grit....." 13 00
Shovels and Spades.—Groom Shovel Co...dis 40 %
Grain Scoops—Patent Corn Strain Groom Shovel Co.....dis 40 %, and 50c per doz extra
do. M. Rowland & Co., dis 30 % and 50c " "
do. O. Ames & Son, 25 % and 50c " "
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.....₱ lb 15c net
Solid Cast Steel....." 9c net
Spaths and Cradles.—Seymour Mfg. Co.'s.....dis 40 %
Sorghum Machinery.—Ball Cane Mills.....dis 20 %
Scantlin's Seamless Evaporators.....dis 15 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express.....₱ lb. 14c
Blue Seat Springs.....
Thimble Skeins.—Whitewater's.....$48 00 net
Vises.—Wilson Mfg. Co.'s.....₱ lb. 11½c
Wheelbarrows.—Champion Iron Wheel..₱ doz $34 00
Champion Wood Wheel.....₱ doz 29 00
" Garden.....₱ doz. 34 00
Wagons.—Whitewater Farm Wagons—
Thimble Skein.....3 in. $74; 3¼ in. $78; 3½ in. $79
Iron Axle.....1⅛ in. $78; 1⅛ in. $81; 1¼ in.
Wire Bale Ties.—Buckeye Double Twist.....net list
Dederick Adjustable.....net list

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. S. Hicks & Co.)

Tin Plate.

IC, 10x14, Best Char.	$ 8 00	IXXX, 14x20, B. Char	$15 50
IX, 10x14, "	10 50	IXXXX, 14x20, "	13 00
IC, 12x12, "	8 00	IC, 20x28, "	10 00
IX, 12x12, "	10 50	IX, 20x28, "	25 00
IC, 14x21, "	8 00	IXX, 14x21, "	31 00
IX, 14x20, "	10 50	IC, 14x31, Best Roof..	7 50
IC, 12x24, "	9 00	IX, 14x20, "	10 00
DX, 12½x17, "	11 50	IC, 20x28, "	15 50
DXX, 12½x17 "	13 00	IX, 20x28, "	20 00
IX, 14x14, "	12 00	IC, 10x14, Best Coke..	7 00
IXX, 14x14, "	22 00	IC, 14x20, "	7 00
IXX, 14x20, "	13 00	IC, 10x20, "	11 50

Sheet Iron.

	Com'n.	S L W. Sm'th.	D. Ref'd Sm'th.	Juniata
No. 16 to 20	3 4c	4 4c	5c	7 4c
No. 22 to 24	3 4c	4 4c	5c	7 5c
No. 25	3 5c	4 6c	6¼c	8 1c
No. 27	4 c	4 6c	6½c	8 3c

Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12.....per lb. 14c
No. 1 Stained—No. 9, 10, 11, 12.....per lb. 12c
Tare 22 lbs. to Bdle. For less than Bdle. add 1c. ₱ lb.
Patent Planished Iron.
No. 24 to 27, A quality.....per lb. 12c
" " B " 10c
For less than Bdle. add 1c. per lb.
Galvanized Sheet Iron.
Juniata, or 1st quality.....dis 55 %
Block Tin.

Straits, Large Pigs	23c	Straits, Small	24c
Eng. Ref'd, Large Pig	23c	Bar	22c
do Small	24c		

Solder.

Extra in Bars	13c	No. 2, in Bars	8c
No. 1, in "	14c	in Bars	8½c

Pig Lead—Pigs, 7c
Antimony.....18c
Bismuth.....$1 00
Nickel.....3 50
Crucibles.—Dixon's.....₱ No. 5c
Babbit Metal.

No. 1	₱ lb. 20c	No. 3	₱ lb 14c
" 2	" 18c	" 4	" 9c

Copper.

Brazier's, 30x60, 14 to 100 lbs. Sheets			32c
" " 10, 11 & 12 lbs., "			34c
" " 8 and 9 lbs. "			36c
" " 6 and 7 lbs. "			38c
Tinned, 14x48, 14 and 16 oz.			32c
Planished, 14x48, 14 and 16 oz.			37c
" Boiler Sizes, 14 and 16 oz.			41c
Gutter Copper, 20x72, 10 and 12 lb. Sheets			34c
" 20x72, 14 lb. Sheets			32c
" 24x72, 10 and 12 lb. Sheets			34c
" 24x72, 14 lb. Sheets			32c
Reservoir Copper, 16x60 and 18x60			32c
Bar Copper, Square and Round, ¼ to 1⅛ inch			33c
" " " ⅛ inch			30c
Copper Bottoms			34c
Copper Nails			45

Brass.

Roll, No. 10 to 28, 12 in. in width			70c
" 30, 12 in. in width			31c
" 3½, 16 "			36c
" 34, 16 "			37c
" 36, 16 "			38c
Platers, No. 40, 6 "			38c

Brass and Copper Wire.

	Brass.	Copper.		Brass.	Copper
No. 0 to 20	34c	45c	No. 24	38c	50
" 21	37c	46c	" 25	42c	3
" 22	36	46c	" 26	44c	56c
" 23	37c	46c	" 27	46c	60c

Brass Spring Wire, 2c. ₱ lb advance.
Brass Tubing.

Plain to No. 20	45c	5-16 inch	30c
⅜ inch	36c	½ "	31c

Copper Rivets and Burs.....dis 10 %
Brass Kettles.....₱ lb 45c
Sheet Zinc.—600 lbs. cask.....7½c
250 lbs. cask.....8½c
Sheet.....8½c
Wire.—Iron, Market.....dis 45 %
Iron, Coppered Market.....dis 40 %
Fence, Nos. 5, 8 and 9.....₱ lb 4½c
Trellis, Nos. 10 and 11.....5½c
" No. 12.....5¾c
Hay Baling, Charcoal, No. 10 and 11.....5½c
" " No. 12.....5¾c
Broom, Tinned, Nos. 18 to 22.....17c
Fence Staples.....per keg of 100 lbs. $6 25
Per lb.....6½c
Iron Rivets.—Black, papered.....dis 40 %
Tinned, papered.....dis 40 %

In bulk	5-16	⅜	5-16	½	in. diam.
	9½c	8¾c	8½c	6¾c	per lb.

Sad Irons......₱ lb 3½c
Enameled Kettles.—Standard Mfg. Co.....dis 55 %
Enameled Sauce Pans.
Standard Mfg. Co.....dis 40 %
Enameled Boilers.—Standard Mfg. Co.....dis 0 %
Dripping Pans.—Smooth Iron.....₱ lb 10c
Geneva Fluters.....per doz $15 00
Monroe Fluters....." 14 50
Stove Polish.—Dixon's.....per gross 6 00
Gem....." 4 50
Japanese....." 3 50
Dixon's, in bulk.....₱ lb
Coffee Mills.—Parker's.....dis 20 %
Granite Iron Ware.....dis 25 %
Spoons.—New list.....dis 10 %
Refined Iron Ware.....dis 35&5 %
Plain Stamped Ware.....dis 40 %
Japanned Ware.—St. Louis list.....dis 40 %
Fry Pans.....dis 40 %
Bars.....dis 30

THE JUDSON GOVERNOR.

It is a common method to advertise Governors *without cost,* unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

Reduced Price List,

FEBRUARY 1, 1877.

☞ For dimensions of Governor, see Illustrated Price List.

THE JUDSON PATENT

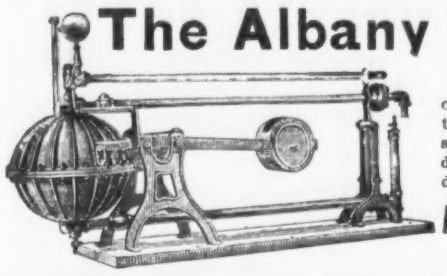
Improved Steam Governor.

Size, Inch.	Plain.	Bright Finished.	Extra for Spe'd'r	Stop Valve.
⅜	$16·00	$18·00	$1·90	..
½	18·00	20·00	1·90	..
1	21·00	22·00	2·00	$5·00
1¼	23·00	26·00	2·25	6·00
1½	26·00	30·00	2·50	8·00
2	31·00	35·00	2·75	10·00
2¼	36·00	41·00	3·25	12·00
2½	40·00	45·00	3·50	14·00
2¾	45·00	51·00	3·75	16·00
3	50·00	57·00	4·25	19·00
3½	59·00	67·00	4·50	23·00
4	69·00	78·00	5·00	28·00
4½	80·00	90·00	5·50	34·00
5	90·00	101·00	6·00	40·00
5¼	105·00	117·00	6·50	46·00
6	120·00	133·00	7·00	54·00
7	142·00	156·00	8·00	65·00
8	175·00	192·00	9·00	79·00
9	198·00	218·00	10·00	..
10	210·00	240·00	12·00	..

No Charge for Boxing & Cartage.

JUNIUS JUDSON & SON, Rochester, N. Y.

The Albany Steam Trap.



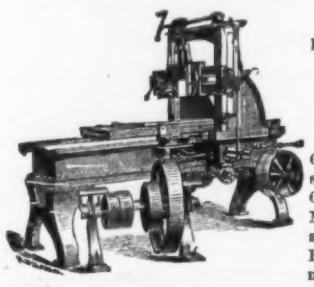
This Trap automatically drains the water of condensation from *Heating Coils,* and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

Albany Steam Trap Company,
Albany, N. Y.

The Pratt & Whitney Co.,

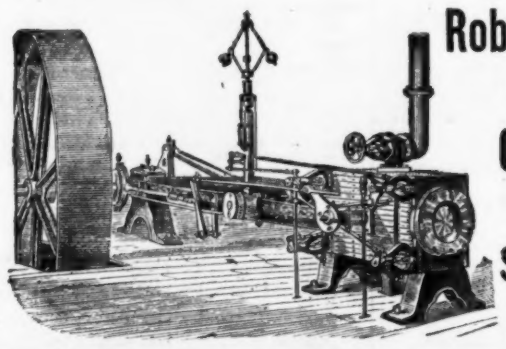
Hartford, Conn.,

Have constantly on hand and making



Drop Hammers

Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.



Robt. Wetherill & Co

CHESTER, PA.

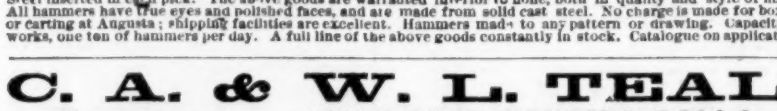
Corliss Engine
BUILDERS.
Shafting & Gearing,
Boiler Makers.

THORNE, DeHAVEN & CO., Drilling Machines,

21st Street, above Market, Philadelphia.

PORTABLE DRILLS. Driven by power in any direction.
RADIAL DRILLS. Self-feed—Large Adjustable Box Table.
VERTICAL DRILLS. Self-feeding.
MULTIPLE DRILLS. 2 to 20 Spindles.
HORIZONTAL BORING AND DRILLING MACHINES.
HAND DRILLS. CAR BOX DRILLS.
SPECIAL DRILLS. For Special Work.

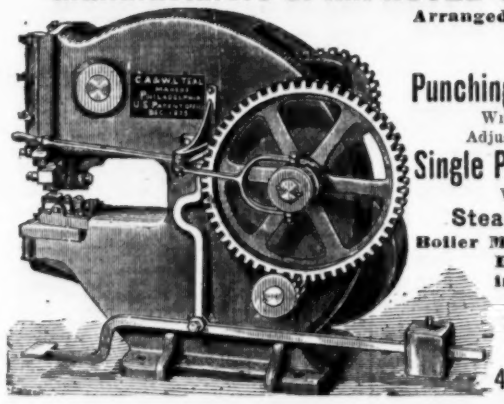
H. H. HARVEY'S HAMMER AND TOOL WORKS,
Augusta, Me.



SPECIALTIES.—Stone Cutters' Hammers and Tools, Quarrymen's Drills, Wedges and Half Rounds, &c., &c., &c., Miners' Hammers and Tools, Blacksmiths' Hammers and Tools, Patent Hammers for picking burr stone. Also the common Mill Picks and Wood wedges Steel or Iron, R. R. Solid eye Picks, with one lb. of best Cast Steel inserted in each pick. The above goods are warranted inferior to none, both in quality and style of finish. All hammers have true eyes and polished faces, and are made from solid cast steel. No charge is made for boxing or carting at Augusta; shipping facilities are excellent. Hammers made to any pattern or drawing. Capacity of works, one ton of hammers per day. A full line of the above goods constantly in stock. Catalogue on application.

C. A. & W. L. TEAL,

Manufacturers of IMPROVED BENDING ROLLS



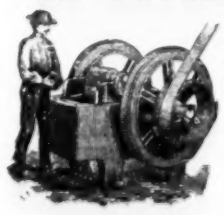
Arranged for Removing Work from the end of top roll.

COMBINED

Punching & Shearing Machines,
With "Automatic Stop motion,"
Adjustable to any point of the stroke.
Single Power Punching Machines,
With Shearing Attachments.
Steam Riveting Machines,
Boiler Makers' and Machinists' Post Drilling Machines, Hair Picking & Cleaning Machines, and
MACHINERY
In general.
4116 Ludlow St., Philadelphia.

BLAKE'S PATENT
STONE & ORE BREAKER.

New Pattern with Important Improvements & Abundant Strength



For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS It is extensively in use in MINING operations, for crushing

IRON, COPPER, ZINC, SILVER, GOLD, and other ORES.

Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, &c.**

For Illustrated Circulars, and particulars, address,

BLAKE CRUSHER CO., New Haven, Conn.

Knowles Patent Steam Pumps

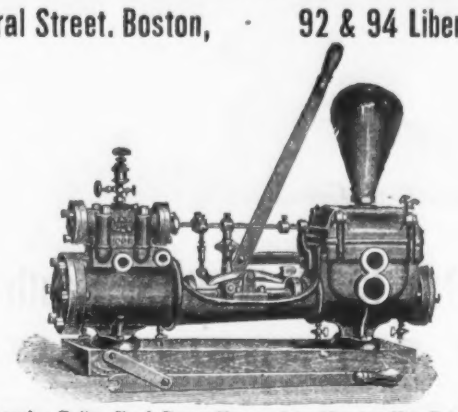
MANUFACTURED BY THE

KNOWLES STEAM PUMP WORKS,

WARREN, MASS.

WAREHOUSES:

14 & 16 Federal Street, Boston, · 92 & 94 Liberty Street, N. Y.

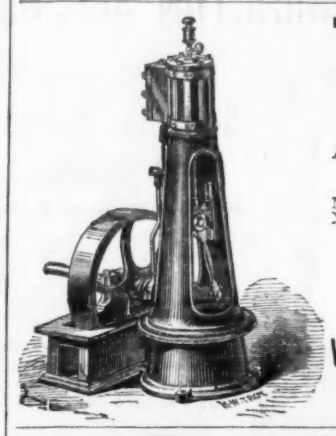


Cut above represents regular Boiler Feed Pump, No. 3 and 4. Showing New Patent Valve Motion, and Hand Power LEVER Attached and Detached.

FIRE PUMPS a specialty.

Mining Pumps (both Double Acting Plunger, and Piston Pattern,) which we guarantee to run absolutely noiseless on any lift from 100 to 600 ft., at a single lift, a specialty. Pumps for every possible duty. Prices as low as any, and our workmanship and material altogether the Best.

Every machine furnished under a complete guarantee.



The C. O. D. Engine

COSTS LESS

And is equal to any Engine in the market.

ALL WORKING PARTS WELL FINISHED.

No. 1, Cylinder 4x6..... $125·00
No. 2, " 5x7..... 150·00

MANUFACTURED BY

J. AUSTIN & CO.,
115 Liberty St., New York.

Also, Proprietors and Manufacturers of

Wheatcroft's Self-Adjusting Pipe Wrench,
AND
SCRIPTURE'S FUNNEL TOP OILERS.

Keystone Pressure Blowers.

Anti-friction and noiseless; maximum blast and minimum power; all sizes for

Forges, Foundries, Rolling Mills, &c.

ALSO

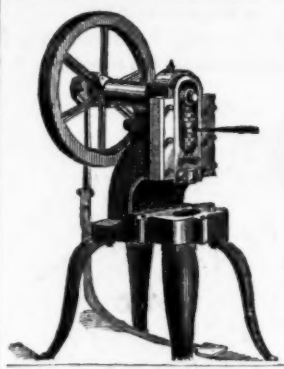
KEYSTONE EXHAUST BLOWERS.

Made on same principle,

For Ventilating Mines, Buildings, etc.; Removing Dust, Shavings, etc.; Drying Wool, Lumber, etc. Every Blower Guaranteed. Send for circular, or call and see them in operation.

KEYSTONE PORTABLE FORGE CO.,
218 Carter Street, Philadelphia.

Also, sole manufacturers of the celebrated **KEYSTONE PORTABLE FORGES,** for all classes of work, from the lightest to the heaviest.



A. H. MERRIMAN,

Patent Power

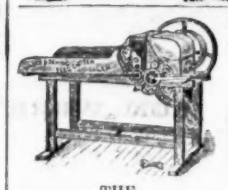
Punching Presses.

Patentee and Sole Manufacturer.

I warrant every part of this Machine to stand the shock of the wheel running at 125 revolutions.

West Meriden, Conn.

Machinery Hall, Philadelphia, Section B 4, Columns 28 and 29.



Silver & Deming Mfg. Co.

SALEM, OHIO, U. S. A.,

Manufacturers of

Improved Feed Cutters
HORSE POWERS,
Meat Choppers & Meat Stuffers,
HUB BOXING MACHINES,
Spoke Tenoning Machines,
Hollow Augers, Adjustable Clamps,
WATER TUYERE IRONS,
Blacksmith Drills, Saw Gummers, &c.

THE Silver & Deming FEED CUTTER

Received **Award and Special Report** from Judges at the *Centennial Exhibition.*

Barnard, Brown & Co

Agents for the Silver & Deming Feed Cutters for Mexico, Central and South America,
35 Broadway, New York City, U. S. A.

Liberal discounts to the trade. Send for price lists.

Improved Blacksmith Drill.

Celluloid Emery Wheel Co.,

Manufacturers of all kinds of

Celluloid Emery & Corundum Wheels

FOR DENTAL AND MANUFACTURING PURPOSES.

One of the Strongest, can be run with or without water, and will not glaze under any circumstance.

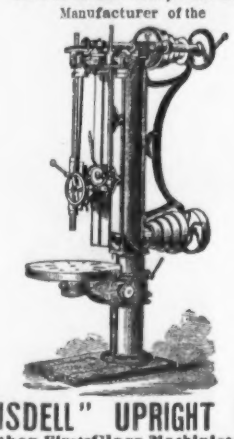
Office, 228 Market Street, NEWARK, N. J.

Send for Price List and Circular.

P. BLAISDELL & CO.,

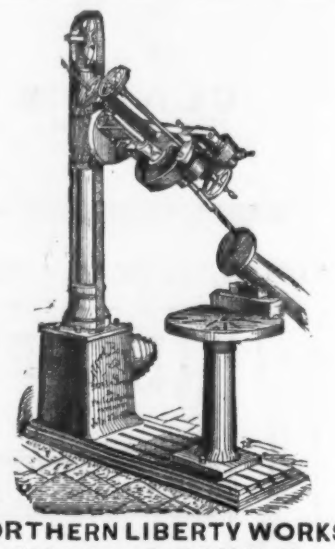
WORCESTER, MASS,

Manufacturer of the



"BLAISDELL" UPRIGHT DRILLS

And other First-Class Machinists' Tools.



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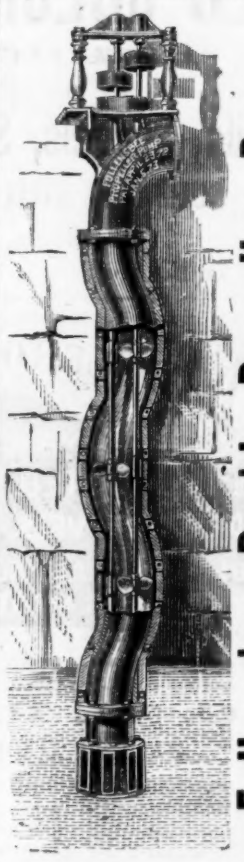
312 & 314 Greene St., Philadelphia, Pa.

ALFRED BOX & CO.,

Manufacturers of

Machinists' Tools, Pulleys, Shaftings and Hangers.

Patent Universal Radial Drills, Steam Hammers, Boiler Makers' Outfits.



Follansbee Double Propeller Pump.

Medal and Diploma Awarded, Centennial Exposition, Philadelphia, 1876.

KILVERT & TAPPAN, General Agents,

Room 38, Simmons Building, Cor. Water and Congress Sts., Boston, Mass.

EUREKA SAFETY POWER!

Practically **impossible to explode.** Tested to 300 lbs pressure per square inch. Will split 2 inch seasoned oak—grinds bushels Corn per hour. **Price $250.** Also, Stationary Engines and Boilers and **Spark Arresting Portable Engines** for plantation use. Send for our circular. Discount to the trade.

B. W. PAYNE & SONS,
Corning, N. Y.

The Brown Cotton Gin Co.

NEW LONDON, CONN.

Manufacturers of

COTTON GINS,

With or without

Self-Feeding Attachment & Condenser.

Cotton Gin Saws, Ribs and other Gin materials. Also **Albertson's Segment Screw Cotton,** and **Hay Press.** Send for Circular.

Machinery, &c.

THE

Shapley Engine

Patented Feb. 10, 1874.

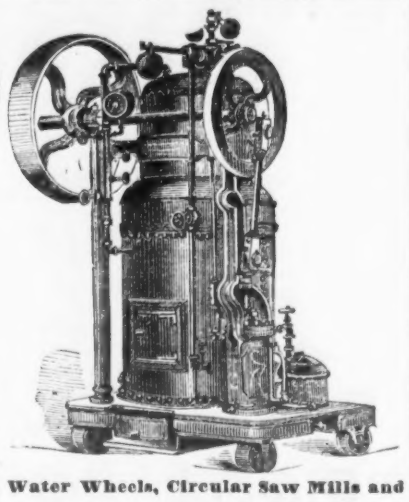
COMPACT,
PRACTICAL,
DURABLE,
ECONOMICAL.

$200·00.

Cheaper than any Engine offered of the same capacity.

MANUFACTURED BY

SHAPLEY & WELLS
Binghamton Iron Works,
Binghamton, N. Y.



Manufacturers of **Steam Engines, Boilers, Water Wheels, Circular Saw Mills and Mill Work generally.**

BUSH HILL IRON WORKS,

Corner 16th & Buttonwood Streets
PHILADELPHIA.

JAMES MOORE,

(Successor to MATTHEWS & MOORE,)

Engineer, Machinist, Founder and Boilermaker.

CASTINGS of every description.

ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE

Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.

Sugar Mill, Saw Mill and Grist Mill Machinery,

AND MILLWRIGHTING IN GENERAL.

BOILERS—FLUE, TUBULAR AND CYLINDER, and all kinds of TANK AND PLATE IRON WORK.

CHAS. W. ERVIEN & CO.,

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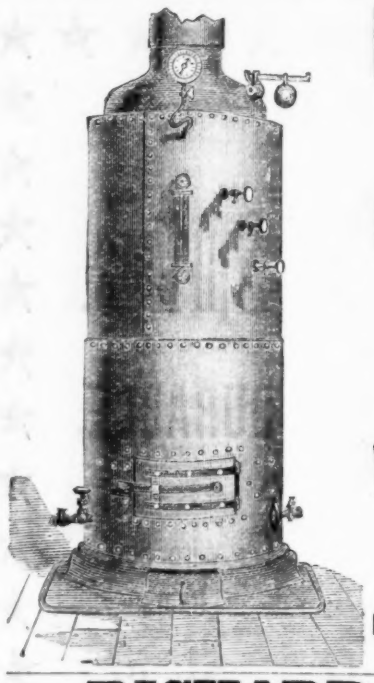

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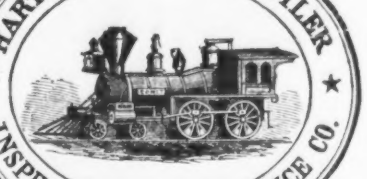

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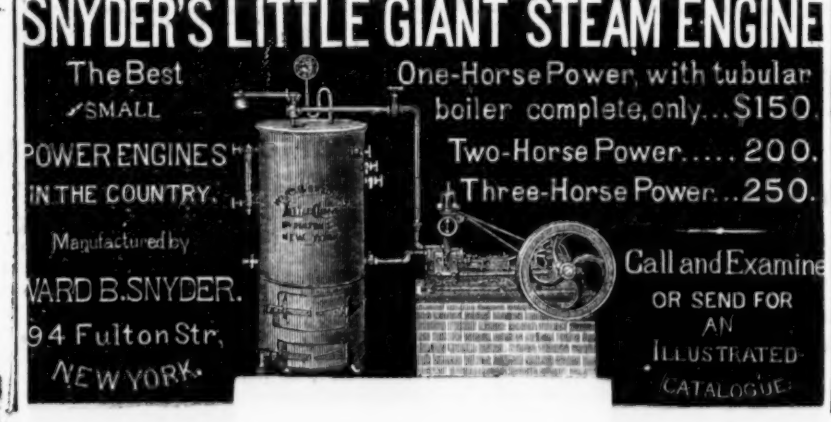

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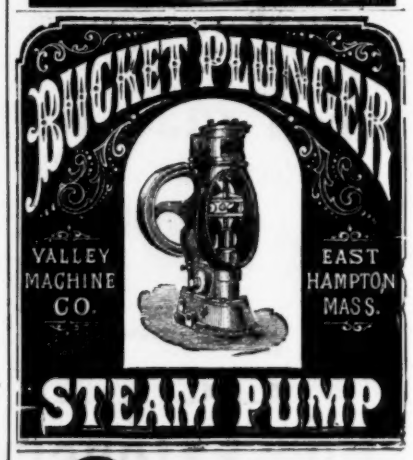

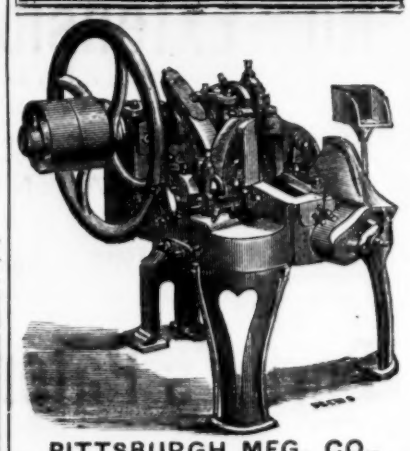

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